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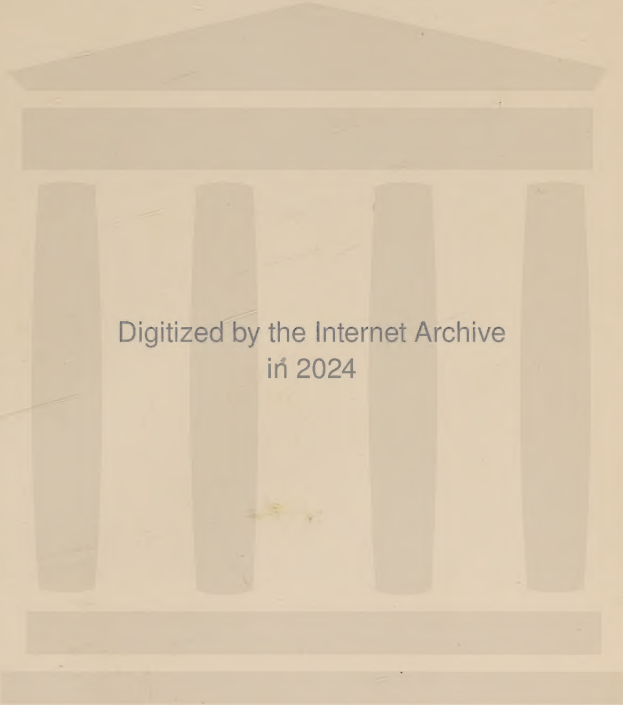
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Hunting and Conservation

The Book of the Boone and Crockett Club

GEORGE BIRD GRINNELL

CHARLES SHELDON

EDITORS



YALE UNIVERSITY PRESS
NEW HAVEN, CONNECTICUT
MDCCCC XXV

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Printed in the United States of America

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MEN WHO LOVE SPORT

"Men who love sport will reap therefrom no small advantage for they will gain bodily health, better sight, better hearing and a later old age. Above all, it is an excellent training for war. In the first place, such men, if required to make a trying march on bad roads under arms, will not break down; they will stand the strain because they are accustomed to go a hunting wild animals with arms in their hands. Secondly, they will be able to sleep on a hard bed and keep good watch over the post entrusted to them.

"In advance against an enemy they will be competent both to attack and to obey their orders, for it is thus that wild animals are taken. If they are in the van, they will stick to their posts, for they will have learned steadfastness; and in a rout of the enemy they will be able, being used to such things, to press him over every kind of ground. If their own side be beaten they will be able to save themselves and others without dishonour, in marshy, precipitous or otherwise dangerous ground, for from experience they will be quite at home in it.

"Men like these, even when the greater part of their army has been routed, have rallied and fought against the victorious enemy when astray in difficult ground, and have beaten them by their courage and their endurance."

XENOPHON.

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Preface

The chapters in this sixth volume of the Boone and Crockett Club books present two aspects of outdoor life, which, to the uninformed, may seem opposed one to another. We have on the one hand descriptions of hunting—of the killing of animals—and on the other the advocacy of measures by which these animals may be preserved from being killed. There is no conflict between these two views. Animals are for man's use, and one of these uses is recreation, of which hunting is a wholesome form. So long as it does not interfere with the maintenance of a permanent breeding stock of any species this recreation is legitimate and praiseworthy.

The original purpose of the Boone and Crockett Club, to make hunting easier and more successful, has changed with changing conditions, so that now it is devoted chiefly to setting better standards in conservation.

Since the conservation work the Club is constantly doing cannot be carried through without

Preface

the expenditure of money, a means must be had of financing these various efforts. A year or two since it was decided to suggest raising a fund by means of bequests from members, the interest of which fund the Club might use in carrying on its work. It was found, however, that as a voluntary association the Club could not legally receive bequests. To provide for the situation the Club determined to incorporate under the Federal law in Washington a Boone and Crockett Club, the membership and officers of which should be the same as those of the old Club. This incorporated club could receive bequests. Messrs. Cross, Litchfield and Gray were appointed a Committee to attend to this and ultimately carried it through. From three individuals promises of bequests aggregating \$20,000 have already been received. It is hoped that other members may feel that they can make testamentary disposition on behalf of the work, and that not less than \$100,000 may be raised, the fund to be called The W. Austin Wadsworth Memorial Fund.

To the account of the Club's work published in its last volume may now be added the conception and carrying through of the Migratory Bird Law and the establishment of the Redwood League, both of which movements were set on

Preface

foot by members of the Club, Messrs. Shiras, Grant and J. C. Merriam.

In 1923 the Executive Committee, with some other members of the Club, considered and recommended the two policies printed in this volume, relating to the care of game in National Forests by the Forest Service, to the Administration of Game, and to the need for a National Recreation Policy. At its last annual meeting the Club unanimously adopted the policies, and ordered them printed and circulated. About the middle of April, 1924, the President of the United States publicly expressed the view that a National Recreation Policy was needed and appointed a committee to formulate such a policy. The conference of associations and individuals called to consider the matter aroused keen interest and was largely attended.

The organization of the National State and County Governments with private associations and individuals and their continued coöperation is likely to work a great service over all this country.

The idea of a National Recreation Policy originated with members of the Boone and Crockett Club, and the subject was brought to the attention of Mr. Coolidge and clearly explained to him through the work of Theodore Roosevelt.

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This action by the Club and its support by the President of the United States is a long forward step for conservation in this country, and a most hopeful sign for the future. Members of the Boone and Crockett Club feel satisfaction that in this case, as so often before during its many years of service, the Club has stepped to the front to lead public opinion by offering a plan so obviously for the general good as to receive prompt acceptance.

THE EDITORS.

September 5, 1924.

Hunting and Conservation

Mouflon in Sardinia

There were four of us, the Parson, the Soldier, the Sculptor and I, who took the train from Rome to Civita Vecchia one winter afternoon. The steamer left for Terranova at nine that night. We were all equally ignorant of what lay before us. We knew only that Sardinia was a wild country and that mouflon and bandits were to be found in the mountains. The Parson had somehow become acquainted in Rome with a hospitable Sarde who had asked him to pay him a visit on his native heath and to shoot the mouflon. So the Parson, a sportsman as well as a priest, invited us to join him.

Our destination was a small town in one of the wildest parts of the northern and middle end of the island. Of this town our friend was the Syndic. At Terranova we were met by a native in charge of a curious vehicle of the high-wheeled victoria type, drawn by two rather emaciated ponies. Our luggage was, as is often the case of explorers unacquainted with the country they are visiting, out

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of all proportion to our needs or to the capacities of the conveyance. But we loaded our stuff and piled into the carriage until we were clear of the town. After that we elected to walk. The road was mostly uphill and excellent. Terranova from our destination is about twenty-five miles in a straight line, and naturally we found it more, as the road was by no means in a straight line. The horses were energetic and so were we. After some six hours we came to a tiny hamlet at which the driver halted and gave us the welcome information that drink was to be had. My memory still carries the delight of that moment. From a forlorn cabin a native emerged carrying a huge two-quart bottle of white wine—but only one tumbler in his paw. The Soldier by direct attack secured the glass and emptied it three times, while we watched him thirstily and enviously. The wine was cool, dry and delicious. Our hands went to our pockets, but our money was refused and we were told that it was “on” the Syndic. The good old man! We blessed him heartily and resumed our march.

Soon after, the driver told us that his master would come to meet us on the road, so to save his face we all climbed into the carriage on top of our baggage and proceeded with what cramped dignity we could maintain. Our pace was slow

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enough, but ere long up came the Syndic. He was a portly, handsome old gentleman in native dress, mounted on an excellent pony and accompanied by several mounted and armed men. We were all duly presented to him by the Parson and warmly greeted. In a short time we came to his village and gladly entered his large brick house.

In an hour or two, when we had unpacked our baggage and washed off the dust of travel, we were summoned to supper. It was about 9:30 and we had eaten nothing since Terranova and had walked a good many hours. Empty as drums and thirsty as fish we fell to with delight. At this time I spoke no word of Italian and it was just as well. As soon as I was thoroughly restored by the good food and drink, I felt it incumbent upon me to say something to our host. So I asked the Sculptor to give me a few words of Italian with which to express my gratitude. The Sculptor was a bit of a wag. He promptly whispered several words, but luckily I had seen most of them scrawled upon the eternal walls of Rome and knew better than to use them. In this case silence was golden. We were waited upon at table by one of the loveliest girls it has ever been my good fortune to meet; a pure Arab type, with large melting black eyes full of a burnt glow, and with perfect features. On her

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lovely cheek was a smudge of black, probably from the kitchen, which during our stay remained. Let us hope that her young man kissed it away in time.

That night we clamored for a stalk, but our host shook his head and said that was not the way to shoot mouflon. The *caccia grossa*, or drive, was the true Sardinian way. Besides, to stalk we should go alone, or with one native each to show us the way, and so forth. Moreover, he had envious neighbors and these, in order to shame him, might make trouble for poorly accompanied guests of his. No; he had summoned his friends and all was prepared for a grand hunt. We could not argue with him, and so the drive duly came off. We rested the next day and prepared ourselves for the fray.

Long before dawn we sallied forth on horseback, led, followed and surrounded by a mob of armed and mounted gallants. After a while we halted in a valley by a brook, with bare, treeless hills at our front and rear. We were duly posted at intervals below one side of the hills. Save for a half-dozen men who were posted with us, the band disappeared up the valley in two directions; and then we waited and waited and waited. Lord! How I hate a drive! Half asleep I saw an eagle soaring over against me and watched it lazily.

Mouflon in Sardinia

Shouts could be heard on the hills. Here and there a man appeared high up in the distance. Suddenly I heard the patter of feet—I grabbed my gun. Two ewes and a lamb were almost on top of me! Both barrels of my gun went off in the air and I fell on my back from the rock upon which I sat. Everywhere in front and around me guns banged and shot flew. I hugged my rock and lay low. A man came up and spoke to me; I guessed that the drive was over and thanked the gods that I was safe. There were half a dozen dead mouflon lying about. One of my friends, I quite forget which, had shot a ewe. The Sardes surrounded us and jabbered enthusiastically over the results. Then we mounted our ponies and adjourned to a lovely ilex wood, where we all partook of a huge and excellent banquet.

In the afternoon we rode home, where upon our arrival we were warmly welcomed by our host and each in turn asked if he had got a shot. We could all say yes to that, so the kind old boy was delighted. That night we ate mouflon steaks and most excellent they were.

The next day we insisted on a stalk and kept at the Syndic until he reluctantly consented. Out we went with blood in our eyes and all day we walked and nothing was to be seen. Of course natives were

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sent with us. They were as noisy as a parcel of schoolboys on a picnic. On our return the old gentleman chaffed us pleasantly about the impossibilities of stalking mouflon. He gave the worn old pretext that the game always saw the stalker first, and left. The time-honored yarn was told about the hunter from whose head a hair fell: how the deer heard it fall, the wild boar smelt it and the mouflon saw it.

That was the end of our stay with the Syndic. The Soldier had to return to his duties; the Sculptor had engagements also and went with him. We bade our host farewell and left a handsome sum in the fair though grimy hands of the serving lass. In Sardinia one cannot pay for hospitality direct; one gives extra handsomely to the servants and the master gets most of it. So back we drove to Terranova and there we parted. The Parson and I took train and traveled round and down the island to Cagliari, where we spent Sunday. There we learned that a new railway was building from Cagliari to Aritzo, and that we could get pretty close to the big mountain of Cenn' Argentu, where mouflon abounded. We went by train and 'bus to Aritzo and found it a lovely spot, with a good inn kept by a Milanese. Here we invited the mayor and the local doctor to dinner. They readily

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offered us every assistance in getting together an outfit for the mountains. We had horses for ourselves and baggage and some six or eight men. These went on foot or in true Sarde fashion rode two or even three on one pony. I have seen a man and his wife and two children besides saddlebags on one small pony.

We left early in the day and in a few hours were well up in the hills. We camped in the open, a simple plan, consisting of a fire surrounded by our men and baggage, by a spring. The horses were tethered near by; we supped and lay in our blankets on the ground. The Sardes sat in a ring, round us and the fire. About dusk a stranger crept near us, and after looking us well over came to the fire. He was a little old chap with a faded green waistcoat which told of the village he came from, for in those days all natives wore costumes which varied with the different localities. He had a gun, of course, and produced an ancient pipe, which I filled for him. Poor old man! He was an outlaw: eighteen years before he had shot a man with whom he had a feud. For all those years he had lived in the wild, occasionally getting powder for his gun and food for his stomach from friends and always looked for by the carabinieri. In two years more he would be free by lapse of time and in

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default of capture. I heard afterwards that they caught him a few months after our visit, and he was condemned to pass his remaining years in the salt-works in the lowlands.

At dawn next day I was up and off with a large, fat, lazy Sarde to try a stalk. Over the crest of a slope not a mile from camp I saw mouflon—a herd of about a baker's dozen—quietly feeding. Unfortunately my native saw them too and rising to his full height he waved both arms and bawled, "There are the mouflons." No chance of a shot for me. The game fled; I could have loosed off into 'the brown' of them, but I do not like that and did not shoot. Sadly I went back to camp to breakfast and tell the Parson. The case was argued back and forth by means of the only Italian-speaking native in our party. Useless—*caccia grossa*, or a drive, was the only way to shoot mouflon. There were bad people about—witness the outlaw of last night—they could not in honor bound allow us to go about unaccompanied, and so forth and so on, *ad infinitum*.

We breakfasted and tramped about in two separate parties. At noon we all met again over a big feed. The wine was good and plentiful. The Sardes were thirsty and took their full share. My stout friend of the morning did himself remark-

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ably well, sleeping heavily during the afternoon. The Parson and I decided that, except by an almost unimaginable accident, no sport was to be had. Our best plan was to give up and go home. However, we determined on one more day. The weather was fine and the country lovely, with wide, open, park-like spaces, groves of ilex running down into the valleys, and the bare hills above us. That afternoon my fat spoil-sport informed us that he was lame and sick and must go home. He saw the wine growing low, as a matter of fact. At dawn he limped off; through my glass I watched him from a near-by hill and saw him make remarkable progress for a sick and lame man. That night was rather colder and we were glad of our blankets. The Sardes, showing their desire for greater warmth, lowered their breeches to their knees and presented their hinder ends to the fire. I have noticed in various camps that white men almost always sleep with their feet to the fire, the American negro with his head toward the heat and these Sardes presented their backs. We hunted the neighborhood in vain the next morning. Our fire and our presence had apparently caused the game to decamp and we never got a chance. So we pulled out for Aritzo, where we paid off the party. We hired a small two-wheeled cart and pony with a

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boy to drive. Our plan was to see more of the interior and we did not want to go by train back to Cagliari. So we drove across the island to Macomer and the railway, spending one night on the road. We slept at a small, primitive inn, where we were well fed but had to sleep on the floor. The host was a pleasant specimen, but curious in that he neither smoked nor drank wine, a true *rara avis* in his country. Tobacco he did not like and wine did evil to his stomach. At Macomer we took train to Terranova and so home by ship to Civita Vecchia. We had shot nothing to speak of, but we had seen a lot of promising country and the cost of it all was ridiculously low. I made up my mind to have another try. Eventually I did so.

It was a few years later on another visit to Rome. I heard vaguely, through friends at the British Embassy, of an Englishman who had gone to a certain place in the big mountain range in pursuit of mouflon. Whether he had or had not had any sport they did not know—but he certainly had typhoid fever; so that his wife had to join him to nurse him back to life. The village was remote from all railways and he had stayed at a pleasant house with kindly people. Moreover, and best of all, there was a certain Sarde there who was a professional mouflon hunter and knew how

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to stalk. Off I went and this time alone. Before leaving New York I had got me a nice light repeating rifle, half magazine, and one hundred cartridges. Just the thing for brother mouflon.

The train took me to Macomer, where I changed to another line which put me down at a town more in the center of the island. Here I took a sort of cab and drove to my village. I had the name of the family who had taken care of the Englishman. They were glad to see me and promptly produced the native stalker. He told me how he had learned to stalk while acting as a packer to Buxton's party some years before. I had read Buxton's delightful book, *Short Stalks*,—a real sportsman's treasure. Buxton always, or nearly always, took with him on his trips a couple of professional hunters from the Pyrenees. With them this Sarde had probably carried the lunch basket, looked after the ponies and acted as guide, and so knew the country I was bound for like his pocket.

That night I prepared for an early start in the morrow's morn. I got my things together and packed up what little I wished to take along. Among other duties I cleaned my new rifle and then tried the cartridges. May the devil grab the legs of that New York dealer! On my way to the

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boat I had bought the rifle and cartridges. The rifle was put in a sling, the box of cartridges in a box, wrapped in paper and securely tied with string. This was the first time I had opened the box; they were "wrong uns" and did not fit the gun! What to do! What to do! I called for my hosts. They were most sympathetic, but entirely helpless. The local doctor and the hunter were sent for. Various primeval guns were exhibited—old carbines, shotguns and blunderbusses. I was in despair and a fever came on. Then my stalker had an inspiration. A certain Englishman lived near Macomer. He was interested in local railways, most of which had been built by his father. He was a large landed proprietor and a good sportsman and I had met him in Rome often. Perhaps he was at home and perhaps he could lend me a rifle.

Enough said. We got horses and rode to the railway terminal at dawn. We caught our train and were in due course at the Englishman's house. He was away but his brother was at home. "Yes, he could lend me a rifle." It was a Winchester, 45.70 and full magazine, kept to defend the house from possible attack, and also he had plenty of cartridges. May God bless and suitably reward that man! We took the rifle and the evening train;

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slept at the terminal and were on horseback and away at sunrise. The next day we made an early start; three of us on three ponies, myself, my guide and his son, a small but promising lad of some twelve years. He and his pony carried our victuals and drink, blankets, pots and kettles. Luckily the boy was small and his horse strong; together they sufficed for the job. Toward noon and close to the highroad we saw a small band of mouflon. The wind was right and they did not mind us on horseback. We passed on and round a corner where we halted. I got down and crept back cautiously. There was a young buck among them and they bolted at once, but I got the buck in the right place with one shot. He was not forty yards away, as I looked through the back sights of the 45.70. It was an easy shot, but how pleased I felt! The rifle was true to its name; we had fresh meat on the very first morning; things were going well and the omens were propitious. The guide cleaned the youngster quickly, tied him to his saddle and we were on our way again. It was in December and the days were short. At last we came to a swineherd's mud and wattle hut. The pigs had nearly all gone with their herders to the lower country for the winter. The hut was empty and was soon swept out, Keating's powder plentifully applied

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and dry fern placed round the walls for beds. A fire was lighted and mouflon steaks prepared.

After supper, as I smoked my pipe, a swineherd came in, attracted by our fire and the savory smell of roasting meat. We gave him meat, wine and tobacco. He had no Italian, never having served in the army. However, he knew my guide and told him that he was leaving next day and so were all of his friends and their swine in that neighborhood, which was good news to us, for we knew that pigs and herdsmen might easily interfere with sport. He also told us that there were plenty of mouflon and where to find them. Those were the days before universal military service obtained in Italy. Later on, when all had to serve and men were recruited from and sent to all parts of the kingdom, they all learned Italian in addition to their local dialects, and this made it easier for the foreigner.

My guide and I were afoot early. His name was Raffaele Cucusi, about forty years old and dressed in a curious sporting costume, consisting chiefly of a tattered jacket of English cloth, an ancient cap, dirty white native breeches and black cloth native leggings. On Sundays and when going to Macomer with me he was resplendent in a scarlet waistcoat, a sleeveless jacket of mouflon hide, clean breeches

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and a red native cap. When he saw my large spy-glass, he grinned knowingly and said that was the thing to find game. We betook ourselves to a lookout spot on the mountainside where we used the glass in turn. I forget which of us first picked up the band—probably Cucusi. Quite a large one it was, some twenty head, composed of ewes, lambs and at least three big rams. They were in a hollow, mostly lying down, and some high rocks were to the north of them. On one of these rocks was an old ewe doing lookout duty. She had to be carefully stalked and the rest seemed easy. I soon found that my man knew his business. The wind was fair and strong in the open; as we got nearer the hollow where the sheep lay, it seemed to vary and became gusty and dangerous. Several times as we crawled along we had to stop, wait and even change our approach. I was for a reasonably close shot; but Cucusi, like all his kind, was beseeching me to shoot or we might lose the chance. Already I had picked the ram I wanted; he was apparently asleep—but the watchful ewe was not. Suddenly she began to dance. She had seen or winded us. Off they went in a bunch. My ram was quite surrounded by his friends and family. Jumping to my feet I let go—a clean miss and over him as he ran. Away they went and I bit my gunstock. Cucusi

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behaved remarkably well. He said not a word but kept his eye on the flying band till it was out of sight round a hill. "Now, sir," said he, "I think I know where they are gone; we'll find them again a mile or so from here in a place I know well." I did not quite believe him but off we went at a good pace. He did know his job. He took me straight and fast and we found them.

They were all lying down among some scattered trees and as quiet as if they had never heard a shot. This time it seemed too easy, for we had a far better approach through the trees and tall fern. There lay my ram or his twin brother. I laid my rifle across a fallen tree and drew a bead on the magic spot behind his shoulder. I fired and off they went to the right and uphill through the bushes. My ram went as well as any of them. I looked at Cucusi and he at me. "You've missed," said he. "Not I," said I; "no man could miss such a shot." "Well, sir, if you've hit him we'll find him." Now Cucusi had a small yellow dog with him on a leash. This dog was the usual yellow mongrel one sees the world over. We followed the line of flight; the dog ran about, using what God had given him for a nose. Nothing doing—no sign. The dog seemed to know what was required of him and his master assured me that he never

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failed. However, I felt there was something wrong. I was sure of my shot, but where was my ram? The man and dog went on and on. I stayed behind and slowly searched the line. By Jove! there was a tiny drop of blood! So I had not missed, Cucusi and his dog and the devil himself to the contrary. I called them back and showed them the spot of blood. The dog enjoyed this. He licked up the blood and waggled his rump and again went on with his master. I had a good look round; standing where I was it was not more than thirty-five yards from where the ram lay when I fired. The bushes were low and thick. Stepping aside a little I pulled one bush from another and there was my ram as dead as mutton. He was shot clean through the heart and yet he had jumped up and run nearly forty yards with the others. Cucusi and the dog came back; both were delighted—especially the dog. He took a good sniff at the ram, looked at me and grinned and waggled himself as if to say: "Oh! *That* was what you were looking for! Why did you not tell me? I thought you were after a hare or something else!" No, I did not kick him, but I told Cucusi that the dog was doubtless a very good watch-dog and hereafter could stay in camp to protect our stuff, but never go a-hunting with me again. The

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ram was a beauty, with a good head: twenty-eight and a quarter inches outside curve; base eight and a quarter; and ten and a half across. Cucusi galloped him quickly, the dog had his bit and back to camp they went to get a pony or two. I smoked several pipes and stood guard over my prize. That was a most satisfactory beginning. I was well pleased with myself and with Cucusi, and I forgave the dog.

That same afternoon we went out for a late stalk. Not far from camp we spied a tremendous old solitary ram. He was asleep close by a huge square rock behind which one could approach and get a near shot. We got on the rock and peered over. There he lay, fast asleep. "You are my meat!" said I to myself and threw myself down on what looked like nice soft moss—but it was not moss. There is a lovely green moss-like growth in Sardinia which goes by a native word something like "Scrapulu." It consists mainly of tiny hook-shaped thorns, sharp as needles. I had left my coat behind with Cucusi and was in flannel shirt and knickerbockers. The thorns went into my arms, belly and legs. Instead of getting up I saw red and fired clean over the ram. He laid a straight course and ran like a race horse. I jumped up, sat down and with both elbows on my knees took a sight

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between his horns. Master ram gave a buck jump and then stood on his head. "He is dead! he is dead!" yelled Cucusi and ran for him like a deerhound. I pulled myself together, picked out a few of the worst thorns and strutted after him fairly bursting with glee. Cucusi put his knife into the ram's breast, holding up his hind legs to let the blood flow. The ball had taken him slap in the scut, ranged through his heart and shattered the shoulder. This was the best head I ever got: twenty-eight and three-quarters inches outside curve; base eight and three-quarters; across, eight and three-quarters—most symmetrical. Buxton got two heads bigger, but not much bigger, than these two of mine, and he has my best good will and congratulations.

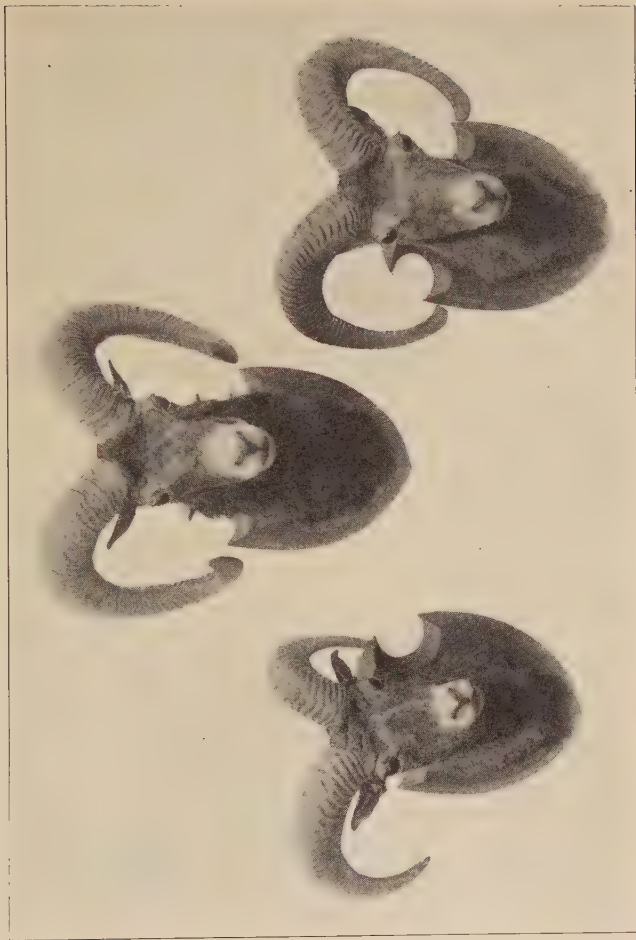
The next day we went in quite another direction; away from our big friendly mountain and more in the woods. Ere long Cucusi found another solitary ram by a rock like my big fellow of yesterday. He was quite in the open but the wind was right and the rock covered my approach. Here was good grass, so I removed my heavy boots and crept forward in my stockings. An easy shot from the top got him where he lay—but he went for thirty yards before he fell dead with the ball bang through his heart. His head was not up to the

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average, though a very nice one. For the sake of the good sport granted me by Saint Hubert, patron of all hunters, I had the three heads mounted in Milan by Bonomi. They hang in my hall at home among half a dozen chamois horns, shot in Tyrol. What luck I had had! Three mouflon—not counting the youngster brought down on the first day—in two days with five shots, two of which were clean misses. The next day we pulled out. I spent the night in the village.

On the morrow, with the three heads properly skinned, Cucusi, in his very best costume, went with me on horseback to the terminal. The day after I went to Macomer to return the rifle so kindly and fortunately lent to me. My friend and his brother were both away, so I left the rifle and cartridges at the house with a note and returned to Rome.

Not long after this most successful trip, another, my third, was planned. This time I went in far more luxurious fashion. My old friend the Sculptor came along, taking with him a professional hunter, who with his two brothers had charge of a small shooting lodge on the seacoast, not far from Porto d' Anzio, where the Sculptor and I had shot many a quail in the May flight. I went a day before him and arranged all matters



MY THREE BEST MOUFLON

Mouflon in Sardinia

at the village. All had been prepared by letter. The supplies were ready: Cucusi and his son were ready too. I met the Sculptor at the terminal and conveyed him on a horse or in a cart—I forget which—safely to our village with all his luggage, and his man, who had none. Next day we were off to the same swineherd's hut. Cucusi had added his brother to the party, so that we numbered five. This brother was younger than my Raffaele and far less sedate and civilized. But he, too, had been with the Buxton party as a packer and so had a good notion of what stalking was. The pigs and the herders had all left the hills, for it was well on in December and cold.

Now the Sculptor was a big fellow and a persistent cigarette consumer. Walking was a bit out of his line. He was accommodated with a large white pony and accompanied by Cucusi himself. When game was found, they tied their horses and proceeded on foot. The Roman keeper stayed in camp to cut firewood and to cook. The small boy was on the road to and from the village for supplies and letters. The Cucusi brother went with me and often we all went together; Cucusi brothers, ourselves and the boy, and all on horseback. In this way we covered a lot of country. One night after shooting a good ram we slept at a carabinieri

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post. The men turned out and gave us their beds. We gave them the mouflon, or, rather, shared it with them and their fleas. Good fellows they were and always are, for they are a most carefully picked lot. No man can be a carabinieri whose father or grandfather has ever been accused of a crime. Whether he was innocent or guilty, the grandson cannot join in that service. A nice bit of hereditary training which evinces itself in the men, who are the best-looking and most presentable soldiers in the whole Italian army. Our sport was only fair; the Sculptor had the best of it throughout. I am glad he did so, for a better shot with gun or rifle I have seldom come across. He got a couple or three—as they say in Ireland—extremely good heads. For my own part, I did not do extra well. My eye was off and I missed some nice ones. The meat of young mouflon is delicious, but the big ones were generally too tough; so we made delicious broth of them, thick and flavored with onions, and potatoes added, and rice.

One night we had a curious exhibition of gluttonous ferocity on the part of the Cucusi brother. When we reached camp after a hard, long day, we found a most excellent pot of broth waiting for us, with wine, bread and black coffee. We were hungry and the fire was low, so we decided to eat

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the broth and waste no time cooking meat. Here-upon the brother became enraged and said he wanted flesh and plenty of it. We told him he could make a fire and cook it for himself. No, not he. We offered him wine in vain. "No meat, no wine!" said he. Finding us firm he roared a little and then rolled over to the door under which the cold wind whistled, curled up and went to sleep supperless. These Sardes are a hardy folk. There he slept the night through in an icy draft with no blanket or cover. Next morning he was serene in mind and sound in body.

The Sardes are rough people, but full of good human qualities. They are most hospitable and friendly to strangers. Gambling is almost non-existent in the island. The people are too thrifty and money is hard to find. The Italian Lotto, which robs and rewards the entire kingdom of Italy, is almost unknown in Sardinia. Of the time of which I am writing there were, I was told, only two Lotto Banks, one in Cagliari and one in Sassari. The women are modest and the men warlike enough, but gentle in manner. In the late War the Sardinian troops served splendidly. A certain Italian general who had many in his command, wrote in a report to the war office of "*miei dolce e tremendi Sardi*," "my gentle but terrific Sardes."

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Speaking personally, I had the good luck to run across some of them on the Piave front where the general quoted above was in command of a division. Small, sinewy, bright-eyed and hardy I found them. The army rations were the best food they had ever eaten. One of them acted as guide to us along that part of the front, but as he had but little Italian on account of his youth, our conversation was limited. Mindful of their past glories, for certain parts of the island in the interior have never been conquered, they seemed to take a sort of personal interest in fighting for Italy, for which they care nothing at all. The real trouble with the interior population is the enormous emigration. Brazil and the Argentine tempt them with the hope of gain and better conditions. In 1892 the population was 736,400 souls. I am sure that there are at least 50,000 less now, not counting the great losses in the World War.

There is no more purely sporting spot than this little-known island for rifle, gun and rod. In the southwest corner, pigeons which inhabit curious little, lofty, almost unclimbable rock islets, can be shot from rowboats. Snipe are plentiful in the marshes of Orizano Bay. In the good old days of long ago, the British Mediterranean fleets wintered there. One sees today along the coast roads

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of the bay and in the villages there black-eyed but flaxen-haired children and grown-ups, the descendants of the British Tar of those days, who had a wife in every port, "But his heart was true to Pol." The type changes all over the country. In the south, in and about Cagliari, one sees the Moor or Saracen mixture. In Alghero in the west, owing to former conquest and subsequent occupation, Catalan is the language. My reader, if his or her curiosity be sufficiently aroused, can consult the great book of all—*Della Marmora* (Paris and Turin, 1839-1860). In English there are two—Robert Tennant (London, 1885), *Sardinia and Its Resources*; C. Edwardes (London, 1889), *Sardinia and the Sardes*. There are other books in Italian, and an excellent, extremely brief and well-done journalistic article, profusely illustrated in color and published in a recent number of the *National Geographic Magazine* by an American lady artist. I think this came out in 1922 and is well worth looking up by those interested. It gives the costumes of many different localities and pictures of out-of-the-way mountain villages.

However, as this is a purely sporting narrative, I must get back to my muttons and give an account of my last trip. I had taken a bad toss hunting with the Roman foxhounds. I could sit a horse

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with difficulty and scarce walk at all. So this time I went in a comfortable yacht belonging to a sporting cousin. Our party consisted of the owner, myself and the doughty Sculptor,—now doughtier and heavier than ever but, like good wine, improved with age. He brought along with him one of the three brothers from his shooting lodge on the sea, as servant, cook, hunter, etc. We sailed from Civita Vecchia to Golfo degli Aranci and Terranova. Here we had the good fortune to find my old friend, the Englishman who had loaned me the 45.70 Winchester with which I had made my best bag. He, too, was on his yacht and we exchanged hospitalities. From him we got permission to shoot on an island not far off. This place was well stocked, whether artificially or by nature, with mouflon. Drivers were secured and we had a day of good shooting. As I could only just walk, and as there were no horses, I saw only enough of the sport to know how good it was. My rifle brought me a young ram, which we ate later on board, and also one real big one of great age and a fine set of horns. This I had mounted and gave to a friend at home whose house is full of beautiful trophies shot by his friends. I don't think he has ever personally killed anything bigger than a fly. My companions, being more active than I, got

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several fine rams. From there we coasted round the north end and through the Straits of Bonifacio to Porto Torres, the port of Sassari.

At Sassari we made the acquaintance of the French consul, to whom we brought letters from the French ambassador in Rome. He took us to call on the Prefect of the city to request permission to shoot in his province; for Sardinia is divided into two, of which Cagliari is one and Sassari the other. I had never asked for permission to shoot anywhere before and only took the precaution this time on account of the yacht and the party. The courteous Prefect at once firmly refused any permission to do anything whatever in the shooting way. As I knew the ropes pretty well, I had taken means to provide us with proper governmental orders in Rome, which directed him to let us proceed on our "lawful occasions." I confess to a strong desire to pull his "Dogberry" leg a bit, or I would have sent in our cards with the orders.

Through the French consul we made the acquaintance of a certain gentleman describing himself as a Russian prince who had married a rich Sardinian lady. He kindly invited us to shoot on his lands. So we took him aboard and sailed south for Bosa, near which port he lived. The

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friendly French consul came too and added much to the party. He was a Corsican by birth—nearly a Sardinian thereby—and knew both islands thoroughly. We drove out to the Russo-Sarde estate, were duly posted in the flat plain surrounded with dense *macchie* or bush. A grand *caccia grossa* took place, but sport was poor. I really cannot remember what was accomplished. I know I got nothing to swear by, though maybe I “loosed off” once or twice. But I had an experience of another and entirely different part of the island.

Then we held a council of war. My cousin had a bad heart, the Sculptor, though a busy man, was game to go, but he had been there before and also enjoyed being on shipboard. I could not walk and so was not overenthusiastic. Thus the trip to the dear, well-known mountain country was abandoned. We stayed aboard and sailed round the island; spent a day at Cagliari, and then round to Orosei where the good wine comes from. This place lies under the Cenn’ Argentu range. We saw the lovely, heavily wooded, precipitous coast-line, tasted of the good wine, and so on and up and across to Civita Vecchia and home to Rome.

Winthrop Chanler.

Conservation of Our Mammals and Birds*

I am afraid that, to a great many people, the conservation of our fauna seems just now, in the face of so many pressing national and international questions, a rather trivial and unimportant matter. But the forces of destruction, both direct and indirect, are going on continuously, and the most rigorous constructive measures serve only to check them, or at most to keep pace with them. All over the world, particularly on the Pacific islands, and in Australia and New Zealand, interesting species of birds and mammals are vanishing. Indeed, whole faunæ, some of them unique, are being replaced by the introduction, sometimes accidental, but often intentional, of noxious mammals like the fox, domestic cat, weasel, mongoose and rat. Vigorous European birds are also rapidly filling in what might be called faunal gaps, where highly specialized native species seem totally unfit to cope with the aliens. Biologically, the story is

* Reprinted, with additions and corrections, from the *Harvard Graduates' Magazine*, September, 1921.

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much the same as that of the extinction of the Tasmanian man, and of the gradual reduction, through disease, hybridism and other factors, of the primitive peoples of Australia, New Zealand and the Polynesian Islands.

I take it for granted that the reader agrees with me as to the real crime involved in the wanton annihilation of a species. The destruction of a great work of art calls forth genuine condemnation, in spite of the fact that it may conceivably be reproduced, or even excelled. But how about the creature that has been millions of years in the making, which, once gone, is gone forever? Usually we have to search in a roundabout way to find some economic excuse for saving it, because no purely æsthetic reason seems strong enough to appeal to the mass of people!

The outlook today, to the lover of wild life and wild places, is most discouraging, and I have often heard men who care deeply for these things speak as if the situation was so utterly hopeless that all effort was either temporary or useless, and bound to end ultimately in failure. But I do not think that we are warranted in taking such a gloomy view, particularly on this continent, and I propose to give a very brief sketch of conditions as they exist today among some of our more important

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game and fur-bearing animals, and our larger or more striking birds. The presentation of the facts, clearly and in a small compass, must necessarily be in the form of a catalogue, and I ask pardon for using this cut-and-dried method.

Before our own memories, and even well before the oldest of us were born, the large game had begun to retreat and become more and more restricted to our national parks and forests, or to more or less rugged or forgotten corners of the country. Especially is this true of our Mid-Western States, where in many regions there is less game today than in New England. This is discouraging, of course, and we confess that there is no longer any Wild West where the traveler can hope to see our large animals in really primitive numbers. To see such conditions now, one must journey to some of our Parks, to the uttermost corners of Alaska, or to the barren grounds of Arctic Canada. But there is another side to all this, a brighter picture, if one only takes the trouble to look; for we have to admit that most of the changes that have taken place are the necessary adjustments of wild life to a continent suddenly laid waste by man—waste at least in a biological sense—and made available for an enormous human population. With the pioneer spirit, and

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the settler's inevitable viewpoint of his right to kill at any time, most of what has taken place was inevitable. Any country where changes come quickly is bound to lose some of its least adaptable mammals and birds: we can only chronicle their final extinction, and console ourselves with the thought that after all their loss means little to most of our population.

If one looks back twenty-five or thirty years the change in sentiment toward nature, particularly toward the birds, is really extraordinary. In fact, the pendulum has begun to swing so far toward the ultra-sentimental side that a certain class of enthusiastic bird protectionists would actually threaten the future of legitimate field sports, if they were able to do so.

If I remember rightly there was, thirty years ago, only one sportsman's journal which steadily sounded a note of warning against spring shooting and market hunting, and that movement was inspired by a very small group of thoughtful men. Today we have completely abolished both these evils, and seven years after the passage of the migratory bird act, we cannot find a protesting voice left to remind us of our folly. If these things are possible, no one ought to lose heart.

It was inevitable that wild bison should vanish

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from our plains, and nothing is to be gained in bewailing their disappearance. It is even doubtful whether the passenger pigeon could exist in any numbers today, so scarce is the kind of forests where it obtained its food, and so delicately adjusted was its rate of increase to its environment. Our pronghorn antelope can never maintain itself in great numbers again, for all the best parts of its former ranges are wheat lands, or fenced cattle country, and even the parched desert tracts have some cattle or sheep wandering across them. It is better to regard certain species as permanently off the list of wild game, and provide for them in small numbers in a few widely separated parks, so that extermination from accidents or disease will be guarded against as much as possible.

Bison. Let us now consider the status of some of our large mammals. The case of the bison is too well known to need much explanation. In the past ten years these animals have increased tremendously in many parks in the United States and Canada, due principally to the efforts of the American Bison Society and of the Dominion Government. In fact in certain Canadian parks they will soon have to be slaughtered for the market, to keep their numbers commensurate with available pasture. At the last census of the Bison Society

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there were 8,473 in captivity, and not far from 600 in a wild state, both in this country and Canada. The annual increase is remarkable among the park animals and there are certainly over 10,000 of them today. Although for a long time it was thought that the northern, so-called Peace River herd of wild bison, was only barely holding its own, recent investigations by Mr. Charles Camsell of the Department of Mines, Canada, seem to point to a larger number than anyone had dared to hope; perhaps between one and two thousand. It is interesting in this connection to note that the European bison, as a result of political changes in Russia, is now either extinct or on the very verge of extinction.

Pronghorn Antelope. There is no other species of large game which needs protection so urgently as our antelope, and efforts have been made for several years, particularly by the American Bison Society, to set aside a large tract to save it, but so far with no very encouraging results. Antelope have done poorly under fence, and little increase has been observed among the small herds in Montana and North Dakota in charge of the United States Biological Survey. In spite of its being now illegal to hunt antelope in every state at any time, they are actually being shot today in parts of

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Nevada and Oregon, and their carcasses used as bait for wolf and coyote traps. This fact was brought out in a survey made two years ago for a proposed antelope sanctuary in Nevada and Oregon.

In brief, the situation according to letters recently received from the Chief of the Biological Survey and others, is as follows: In 1905 a census made by The Survey showed a total of almost 17,000 animals, the largest numbers being in Montana, Wyoming, the Yellowstone Park and Colorado. It is thought that there are not over 7,000 or 8,000 in the United States today. A liberal estimate, Dr. Nelson says, would be 1,000 each for Montana, Wyoming and New Mexico, 600 in Idaho, 800 in Nevada, 500 in Oregon, 200 in California, and the rest scattered among half a dozen states. Among these, there are thought to be a few in western Nebraska, near Scotts Bluff. The herd in the Yellowstone, which numbered 2,000 in 1908, has dwindled to 300 or less, chiefly through losses during the severe winters of 1909-1910 and 1919-1920. These two winters were very severe on all Rocky Mountain game, and antelope no doubt were forced out of the hills into fenced country, where in their weak-

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ened condition they became a prey to coyotes and illegal killing.

What can be done? Little enough, and what is most unfortunate, the efforts of the conservationists are met by strong opposition from the sheep interests. It is doubtful whether the larger cattle men are against antelope reservations, but the sheep interests are, and there must be a campaign of education in the states where efforts would be most effective. The present decline in the sheep industry may prove temporarily favorable to the remaining antelope, but these conditions will not of course last.

The attempt to establish a large unfenced refuge in Oregon failed, and there is now a plan to create one in Owyhee County, Idaho. This is going to be large enough to include both summer and winter ranges; the cattle men favor the project and there are said to be some 600 pronghorn on the ground at the present time.

In California there was established in 1921 the "Mt. Dome Antelope Refuge" which now (January, 1922) is said to contain 87 animals. This reserve is situated in Siskiyou County, and was formed under the auspices of the California Academy of Sciences, the United States Forest Service, the California Fish and Game Commission, the

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New York Zoölogical Society and the American Bison Society.

So much for the outlook on our most unique large mammal. It is a gloomy picture and it must be added that the present winter of 1921-1922 is again severe, and has resulted, so I am informed, in losses among the small fenced herds under the administration of our Biological Survey. All organizations interested in conservation should bring their efforts to bear during the next few years on the pronghorn situation, and Congress must be appealed to from many angles. Other problems of the sort can wait a little, but this one must be solved *now*, or it will be too late.

Wapiti. The situation of our wapiti, or elk, is serious. Hemmed in on every side by farms and small ranches, their movements from high to low levels in the autumn are restricted, and their winter feeding grounds are occupied by herds of beef cattle, flocks of sheep, farms and villages. If there is an early snowfall the hunger-stricken creatures appear close to large towns, as they did in Montana in October, 1919, and are greeted by a hail of lead from anyone who can borrow a rifle. Nearly every winter hundreds to thousands die in Jackson's Hole, Wyoming, in spite of some hay fed to them, but the conditions are temporarily

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better on account of hay provided by the Biological Survey for the southern herd, and by the National Park Service for the northern herd. The net result, of course, has been to create a semi-domestic race of wapiti, which are so tame as not to be worth the attention of a sportsman. But it is very evident that if it had not been for the Yellowstone Park, all the Wyoming elk would have been wiped out long ago, just as they were in Colorado.

In the report of the Director of the National Park Service for 1920, the following appears: "We might as well face the situation squarely. The elk of the Yellowstone are not holding their own. Some means must be found for guaranteeing their protection in bad winters." This tells the story. It is probable that the Wyoming elk have decreased from forty or fifty thousand eight or ten years ago, to about twenty or twenty-five thousand today.

In California there is another species of elk, the San Joaquin wapiti, a small, graceful animal, with slender horns, which formerly ranged all over the central valleys in enormous numbers, and lived in open country or in tule swamps. Only about three hundred are now left, and they are protected on the ranch of Messrs. Miller and Lux, where unfortunately they do some damage by feeding in

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the alfalfa fields. A state park must be created for this species, or it will almost certainly disappear in a few years. A few have been transported to other parts of California, but these plantings have not been an entire success.

The wapiti in the Olympic Mountains of Washington, a somewhat different form, are well protected by heavy forest, but the cutting or burning of this forest might mean destruction to them. The Olympic National Monument, which comprises about two hundred thousand acres on the summits of the Olympics, might be made the basis of a fine preserve for the coast wapiti. The wapiti which inhabited Arizona and New Mexico, lately described as a distinct species, have been extinct for some twenty years. Others that have been brought from the Yellowstone Park have done well, so that the situation there is now very encouraging.

Rocky Mountain Sheep. To the mountain sheep time has brought disastrous changes. In the Southwest every little desert range once had its herd of short-haired, light-colored races of the typical sheep of the northern Rockies. Now only a few scattered bands carry on a precarious existence in the isolated desert ranges of California, Arizona and New Mexico, hemmed in by domestic sheep

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and cattle, and shot at by stray poachers and Indians. All this in spite of completely protective laws. Their future is uncertain unless they can be strictly guarded. But with the true Rocky Mountain sheep the situation is much better, for they exist in some numbers in the Yellowstone, the Rocky Mountain Park in Colorado, the Grand Canyon Park in Arizona and the Glacier Park in Montana. Perhaps there are six or seven thousand head left in the United States. But as a game animal they have almost ceased to exist this side of Canada. In Alaska the white, or Dall's sheep, has been greatly reduced in certain regions, especially in the mountains, near the Arctic coast. In other regions they are still very plentiful, and a rough census by the Governor of Alaska in 1919 showed fifty or seventy-five thousand, a very conservative estimate.

Moose. Moose have shown wonderful staying powers, and hold their own wherever they have any chance at all. The decline of the Indian population has been a large factor. Of course where moose are so vastly outnumbered by shooters as in Maine and Minnesota, the number of licenses issued for their killing will have to be definitely adjusted to their natural increase. It is absurd to give the sportsmen of a state legal permission to



Ewe



Ram

DALL'S SHEEP

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exterminate every head of big game in that state every year, but that is actually done in states like Maine, New York and Minnesota. In northern Minnesota there was created recently a large sanctuary, the Superior State Game Preserve, that should certainly save that species in the United States for a long time to come. The state of Maine ought to follow suit. Some fifteen hundred moose of a slightly different race exist in the Yellowstone Park. There are also a very few in Wyoming, Idaho and Montana, but these last cannot be considered safe from eventual extirpation. In Alaska it is reasonable to suppose that moose will remain for a very long period. They are tremendously concentrated on the Kenai Peninsula, where, according to early records, they formerly existed only in very small numbers. Two men hunting there last autumn saw 67 in an area of only a few acres, and all in sight at the same time! In eastern Canada the species holds its own well, but the constant toll of the best bulls must eventually have the same effect that it did in Maine, that is, of eliminating the finest heads of horns for all time, and probably destroying the vigor of the stock.

In western and central Canada moose are supposed to have been working steadily northward,

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so that now they have reached the Arctic Ocean near the mouth of the Mackenzie River. They have also worked north and west down the Yukon River. This extension of range is difficult to explain, and may be in the nature of a great periodic migration. The dying out of the native population may have had a marked influence in the Far North. The moose has proved very resistant to changed conditions, but has not done well under fence, and does not restock easily. Efforts to restore them in the Adirondacks have been failures.

Caribou. In this species we have an example of a large mammal that seems to have no power of adapting itself to any sort of changed conditions. They probably would not prosper under fence unless the area was so great that they were not conscious of being enclosed. In zoölogical gardens they live on for a few months or a year in a miserable, dejected state, and then perish. The woodland caribou is gone from the United States, never to return, and this was probably inevitable. There were a few in extreme northern Idaho a few years ago, but I doubt if any now exist there. They disappeared from Maine in the late nineties. In eastern Canada the species is slowly but steadily vanishing, and will probably be gone from New Brunswick and Quebec in the next twenty or thirty

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years. In Newfoundland, where it held on in enormous numbers until about 1915, it appears to have suddenly taken a dangerous slump, if the information brought back by Mr. W. B. Cabot and other hunters is correct, which I am much afraid will prove to be the case. The splendid trophies which that island supplied twenty or thirty years ago have not been seen for a long time, and a marked decrease in the size of the horns in any species of deer is more than likely to be the forerunner of a general decline in numbers.

From British Columbia northwest through the Yukon territory and along the north slopes of Mt. McKinley there still exist large numbers of the great, dark-colored woodland or mountain caribou (*R. osborni*) one of the finest mammals on this continent. In the recently created Mount McKinley National Park there are thousands of this or a closely related form. Outside of parks these mountain caribou may all ultimately vanish.

The barren ground caribou continues to exist in enormous numbers all over the Arctic prairies of northwest Canada and into east-central Alaska, but along the whole Arctic coast of Alaska, in the more open coastal portions of western Alaska, and on the Kenai Peninsula it (*R. stonei*) vanished as rapidly as the buffalo when modern rifles were

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sold to the natives by enterprising American traders. Domestic reindeer herds, administered chiefly by the Biological Survey, and now numbering over two hundred thousand, are supplanting these vanished hosts, and will some day be of vast economic value. Grant's caribou, now confined to the west end of the Alaska Peninsula and Unimak Isle, ought to be carefully guarded, for they could be easily wiped out in a few years, consisting, as they do, of only about three thousand animals.

Rocky Mountain Goat. Rocky Mountain goats have no real stronghold in the United States outside of the Glacier National Park, although there are some in Idaho and Washington. They will always exist in this Park in very large numbers; so the species appears safe in the United States for all time. In the coast mountains of British Columbia and Alaska there are still plenty of goats, and as a matter of fact the status of this interesting and distinctly American mammal has changed very little in the past twenty-five years.

Deer. Although white-tailed deer have necessarily vanished from a great part of the Central States, they still exist in enormous numbers, as everyone knows. The southward extension of the range of deer in New England between the years 1900 and 1910 is well remembered by everyone,

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and is a good example of what protection can do. Deer have pushed north and east on the heels of the vanishing wolf and retreating caribou, and will always be easily brought back, even if locally exterminated. A census of the white-tailed deer killed in the United States in 1910, made by Dr. Palmer of the Biological Survey, gives the number as sixty thousand, and this number can easily be maintained by properly located state sanctuaries. In the two states of Maine and Minnesota some thirty thousand were killed in 1920. The story is very different with the mule deer of the plains and the Rockies. These animals will be maintained only with difficulty outside of parks and reservations, and are now extirpated over most of their former range. Here again is one of those species that are absolutely non-adaptable, never become highly educated and inhabit a country which for the most part is ridiculously easy to hunt in.

The black-tailed deer of the Pacific coast needs rigid protection. It is impossible to imagine how it can exist in California, where, with the network of good roads and much open land, hunting is made easy, and many are shot from, or near, motor-cars.

Bears. There is very little use in bemoaning the fate of the grizzly bear, for such huge animals

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simply cannot get along in close proximity to man. This was particularly true of the California grizzly, a pugnacious breed, long since vanished. In the wild parts of Alaska the great fish-eating coast bears are deserving of special protection, for they are the most splendid of all bears. Our eastern black bear is really one of our finest game animals, and it seems to me it should be treated as such, not as vermin. The adaptability of this animal is evident by the way it has persisted in Maine, New Hampshire, Vermont, New York, Pennsylvania and Virginia. The numbers still taken yearly in the mountains of Pennsylvania are remarkable, running up to nearly five hundred, and about two hundred are still killed annually in New York. I think bear hunting could even be brought back in western Massachusetts, without interfering in any way with agriculture. Apparently a few are still taken near Williamstown, in the northwestern corner of the state.

Predatory Mammals. Much as it goes against the grain of the real lovers of beasts and birds to see the larger predatory mammals exterminated, they must perforce bow their heads to the inevitable. Perhaps a few wolves and mountain lions could be spared in our large parks, controlled by a careful system of trapping.

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Energetic warfare has been carried on against the mountain lion in recent years by stockmen, hunters and by the predatory animal department of the Biological Survey. It is almost certain that these pests will ultimately all be killed, unless some are left within the borders of our larger parks.

The jaguar of South America and Mexico, which formerly ranged up into our Southern States, is now gone north of the Mexican line, and is getting extremely rare in northwest Mexico. It is a fierce, and at times dangerous, animal, very destructive to cattle. It is easily killed by poison, so that it never can, and never should, exist in the neighborhood of man.

Wolves. An attempt is now being made completely to exterminate the timber wolf in the United States. I am told by Dr. A. K. Fisher, who is in charge of the work, that this can be done in the near future, and that it is only a question of a little time. The whereabouts of almost every wolf, or pack of wolves, is now known, and experts employed to exterminate them are at work all over the West. But even should wolves be completely trapped out in the United States, they will probably continue to drift in from Canada for some years to come.

The prairie wolf, or coyote, is much more diffi-

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cult to eradicate, and is even extending its range eastward at the present day.

Fur-bearing Animals. The situation with regard to fur-bearing mammals is serious. The tendency now is to enact long close seasons. The animals respond, but are again reduced to a remnant in a few years. Some method must be worked out to regulate trapping, to the end that the numbers of animals taken may be reported. Eventually the annual take in any state must be correlated with the natural increase. The trapping of animals when the fur is not prime must be discouraged, and it is rather hopeful to note that wholesale fur dealers are now taking an interest in order to prevent this unnecessary wastage.

Fur farming experiments have not, on the whole, been encouraging. Valuable silver foxes may be profitably farmed, but such fur is not useful, and is only a luxury. The industry has, however, assumed considerable importance, and there are two hundred and sixty-five ranches devoted to the raising of silver and black foxes in the United States alone. On these ranches there are approximately five thousand animals, but the present low prices of furs will probably reduce this number. Canada, of course, has many more fox farms. Skunks can be farmed, but are not valuable enough

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to warrant the expense, unless it is possible to greatly improve the color and texture of the coat. Recent experiments go to show that such improvement may be looked for, and the skunk lends itself so well to life in confinement that it may some day prove to be valuable to the fur farmer. The really fine fur animals, marten, fisher and otter, do not live long in confinement. They must be maintained on fur preserves set aside for that purpose. On the experimental fur farm belonging to the Government, at Keeseville, New York, marten have only once been induced to breed. The large mink whose remains are found in Indian shell-heaps on the Maine coast is supposed to have been exterminated by fur trappers about the middle of the last century.

Muskrat swamps have proved a valuable asset to an ordinary farm, and have been made to yield as much as thirty or forty dollars an acre, for besides the fur the meat now finds a ready sale under the name of "swamp rabbit."

Beaver belong to that category of animals which are extremely easy to bring back, even after complete extirpation, while marten, fisher and wolverine belong to a different class that cannot be expected to exist except in remote regions. The wolverine and fisher are nearing complete extinc-

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tion in the United States. Otters are among the most remarkable of all our larger fur bearers, as witness their survival in some numbers in eastern Massachusetts, even within twenty miles of Boston. They are too difficult to trap to be entirely wiped out, and they get along perfectly well in settled farm country, just as they have always done in the British Islands.

In a recent publication Dr. Hornaday, of the New York Zoölogical Park, takes a very gloomy view of the future of fur animals, the world over. I think this view is justified, but I cannot but feel that the fur trade itself will wake up in time to at least prevent extermination. The present era of low prices is a godsend to the animals themselves, and it may be many years before the price of fur rises to anything like the disastrous heights of 1920.

Birds. The number of species that have become actually extinct in North America, north of Mexico and the West Indies, is only seven, namely, the great auk, Pallas cormorant, Labrador duck, passenger pigeon, Eskimo curlew, Carolina parakeet and whooping crane. We might add to this, however, a list of ten or twelve more species whose future is very uncertain, and among these are at least two, and perhaps more, species of wading

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birds. In a list of birds whose future is seriously endangered we should probably have to include the following: ivory-billed woodpecker, long-billed curlew, golden plover, trumpeter swan, Dresser's eider, sage grouse, heath hen, masked bob-white, wild turkey and band-tailed pigeon.

The black-capped petrel, which breeds in the West Indies, but wanders up along our coast, might be added to these.

If we examine this list of lost American birds, we find only one or two whose fate could have been avoided, taking into account the lack of interest among our people a few decades ago. The great auk and Pallas cormorant were helpless species, confined to small islands, and an easy prey to fishermen and explorers. The end of the Labrador duck has never been explained, and it is not at all certain that man was the cause of it. Of the Eskimo curlew a single individual may still turn up, here and there, for one specimen was taken in Argentina in September, 1914, but I list it here as extinct. It was shot on the pampas of southern South America in winter, as well as on our east coast in autumn, and in the Mississippi Valley in spring. It might have been saved, but its winter range could never have been made secure. The

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passenger pigeon was destroyed primarily by man, and could probably have been preserved in much diminished numbers. The whooping crane was such a large, showy bird, and migrated over such a thickly settled region, that it is doubtful whether laws could have saved it. Possibly a few individuals still exist, but it seems reasonable now to consider it as practically gone. The last record which I know anything about was made by Mr. T. Gilbert Pearson, President of the National Association of Audubon Societies, not far south of Corpus Christi, Texas, during the past winter. He had the good fortune to actually see, with his own eyes, four of those magnificent birds. When this species is gone we shall have lost perhaps the finest of our great game birds. The Carolina parakeet was curiously sociable in its breeding habits, and was easily trapped and shot. It was good to eat, and was destructive to fruit. It was taken also for its plumage, and had some value as a cage bird, so that it combined a number of characteristics which made its fate certain from the first.

Now as to the second group of birds, those whose future is threatened. The ivory-bill, the largest of our woodpeckers, is still found in scattered pairs in the wild parts of Florida, and is reported from the Okefinokee Swamp in Georgia,

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and in Mississippi. There may be a very few in Louisiana, but this is doubtful. This bird apparently can exist only amid the most primeval or untouched surroundings, so we will have to admit that it was destroyed by man, either directly or indirectly, and will ultimately disappear. The long-billed curlew was destroyed by man, and is gone, probably for good, on the Atlantic coast, and is becoming rare in the West. The golden plover, at least the eastern subspecies, is now a very rare bird, and is rapidly going the way of the Eskimo curlew, and it is still subjected to the same conditions that wiped out that species; namely, destruction and changed conditions in its winter home on the Argentina pampas. The trumpeter swan, the finer and larger of our two swans, is not quite so far gone as it was supposed to be a few years ago. It never was a very common species, so far as we know. Major Allan Brooks tells me that he knows a number of lakes in northern British Columbia where it seems to be resident. A Dutch aviculturist, Mr. Blaauw, has two or three pairs breeding on his estate, so perhaps this bird may yet be saved. Dresser's eider, which once bred commonly all along the shores of the Gulf of St. Lawrence and west along the coast of Maine, is now growing scarce, because its island

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nesting places have been persistently hunted by Newfoundland and Labrador fishermen. If the Province of Quebec takes action soon enough it will still be possible to preserve it, but several well-chosen sanctuaries are necessary.

The sage grouse is a species so strictly confined to the dry sage-brush plains, besides being ridiculously tame, that it has not stood up well before the advance of agriculture, and something will have to be done to prevent its being completely wiped out. The introduction of dry farming on what had hitherto been considered waste land has still further restricted the range of this big grouse.

The case of the heath hen, once common all over our eastern coast lands, and now confined entirely to the island of Martha's Vineyard, is familiar to most sportsmen. Unless other colonies can be started it is more than probable that some accident, or series of accidents, will exterminate it. Only a few years ago a fire swept the central part of the island, and reduced the birds from twelve or fifteen hundred to less than one hundred.

In New Mexico and Sonora, there exists in a naturally limited range the masked bob-white, *Colinus ridgwayi*. For some reason this little partridge cannot cope with the advent of cattle and seems to be rapidly dwindling, if it is not already

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nearly extinct this side of Mexico. Unfortunately there does not seem to be any means of improving this situation.

Perhaps the wild turkey ought not to be included in a list of vanishing birds, but its range is of course much reduced. It is still represented, in four slightly differing subspecies, from Pennsylvania to Florida and west to southern Colorado, New Mexico and Arizona. In Pennsylvania, owing to large and carefully guarded sanctuaries, it has actually increased within the last few years. Nowhere else, so far as I know, is it holding its own. Large preserves are the only method of saving it.

The band-tailed pigeon has been classed as a vanishing species, for it was given scarcely any legal protection until five or six years ago. Its winter range is so contracted that ornithologists have been anxious about it, but apparently its decrease has been arrested by better laws, and it is not going to follow in the wake of its unfortunate cousin, the passenger pigeon.

The black-capped petrel, recently listed as extinct, still seems to be with us. Its breeding grounds on Guadaloupe, West Indies, were interfered with by a volcanic eruption, and it was probably not reduced by the hand of man. Other colonies, as yet unknown, may exist.

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On the whole, the status of our shore birds, particularly those on our eastern coast, is less satisfactory than that of any other group of birds and as soon as the education of sportsmen and bird-lovers has progressed a little more, a close season of at least five years should be placed on this whole group. It is still legal to shoot four species, and one of these, the eastern golden plover, is almost certainly an early candidate for extinction.

Now if we turn to the swimming birds, the ducks, geese and swans, we find the situation, as every sportsman knows, greatly improved, on account of the passage of the Federal Migratory Bird Law. This, combined with the termination of market shooting, both in the United States and Canada, has produced really astonishing results, more wonderful than the wildest optimist had prophesied. Two or three species only need special attention because of their great decline in numbers. The prevention of drainage of waste places, the creation of Federal and state sanctuaries, and the regulation of nuisances, such as floating oil and disturbance by aëroplane, should result in a further increase in our stock of waterfowl. Few people realize the numbers of ducks which are taken in the United States today. A million or more are shot in Minnesota, nearly a mil-

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lion in California and over a hundred thousand in the state of New York. With very few actual figures to go on, I should guess the total number for all the states, exclusive of Canada and Mexico, at not less than six or seven million, which in actual food value alone would be worth at least \$10,000,000. What their value may be from the standpoint of outdoor recreation, no one can say. If the mania for drainage of shallow lakes, which has caused great damage to the wild-fowl reservoirs of states like Iowa and Illinois, could be stopped, most of our wild-fowl would be with us for a long time. No large drainage projects should be allowed without a careful analysis of the whole situation, and it is really criminal the way large sheets of water have been turned over to land promotion companies, to create new land which has often proved utterly unfit for agriculture, and has damaged surrounding property by lowering the water table.

The true game birds, the grouse and quail, come under another head, and it is not possible to state their case in a few words. Too many local problems are involved. The prairie grouse, of six species, seem destined ultimately to vanish. Perhaps there is no help for it, but fortunately there is also no immediate danger. Enough large wheat farms,

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where they are fairly well protected, remain to ensure the continuation of these wonderful birds, but they are not birds that profit by the coming of agriculture. In the Northwest, particularly in Manitoba, the European partridge has been introduced, and, contrary to all our experience with the same bird in the East, has flourished amazingly. It may replace the sharp-tailed and pinnated grouse in time, but it is better to maintain a skeptical attitude toward all recent introductions, until time, the great arbiter, has demonstrated their value. For example: it begins to look as if our introduced ring-neck pheasant, here in the East, was going to be a failure, in spite of the fact that it thrives amazingly for twenty years.

The ruffed grouse of the East, which also occurs in slightly varying forms over many of our western mountains, and north into Canada, is little understood by many bird protectionists. It is a peculiar bird, subject to sudden, widespread depletion, lasting sometimes for several years, and extending from heavily shot areas in New England to the wildest parts of Quebec, so that this does not seem to have anything to do with the numbers shot. During such times alarm calls are sent out, and the bird is pronounced as nearing disappearance. But it has a way of suddenly coming back

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to its former numbers, and confounding all the alarmists. In the East the species has just been through a period of extreme depression, starting with the year 1914, but indications are that recovery has now begun. Many other species of grouse show similar variations of status. In the state of Minnesota over half a million ruffed grouse were shot during the open season of 1920 and about the same number in Pennsylvania. If we go beyond their actual food value, and try to conceive the number of miles of hard walking in rough country which the sportsmen of these states must have covered to bag those grouse, we begin to arrive at a true appreciation of their actual value in health maintenance. Basing my calculation on an average of five miles for every bird, and I really believe this is too low, we have a distance of five million miles covered, which is no small accomplishment in these gasoline-mad times.

In Pennsylvania 287,000 grouse were estimated as taken in 1919, but in 1920 there were over 500,000, which points to a remarkable recovery in numbers after a severe depression. The figures for 1918 are not available, for the season was closed on account of the great scarcity of the birds.

The woodcock, in spite of many predictions to the contrary, is certainly holding its own, and I

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myself feel certain that the past ten years have shown an increase. Breeding stock is returning to regions where it was completely wiped out, and, better still, the idea of the sportsmen of fifty years ago, that they would all be killed by the extension of telegraph wires, is found to be false.

Speaking broadly, there is no reason to suppose that our perching and singing birds, our passerine birds as a whole, are in any danger of reduction. There are fluctuations from time to time, and some species have had their natural habitats seriously affected by deforestation, destruction of old-time prairie conditions, irrigation, etc. Examples of this sort are seen in Smith's longspur, Sprague's titlark and Baird's sparrow. Here in the East we think of the purple martin as a vanishing bird, but the species has really only ceased to nest over a small part of its range. The case of the dickcissel is a curious one, for it is now only found west of the Alleghanies and perhaps has followed the march of agriculture westward to keep in touch with the clover fields it so dearly loved. East of the Alleghanies, however, it has practically disappeared.

Our birds of prey, the eagles, hawks, owls and vultures, should not concern us overmuch. The

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great horned owl, a dangerous neighbor, has naturally become scarce; but he could not be tolerated in any numbers except in the Far North. Kreider's hawk, a prairie form of our red-tailed hawk, has become rare, just as our own red-tailed hawk has. But on the whole, most of our hawks and owls are still abundant, perhaps too abundant to please anyone interested in the artificial rearing of game birds.

The rarest and most striking of all our birds of prey, the great California condor, is still found in a number of different localities, and some sentiment has been aroused in its favor by western bird-lovers.

Hérons, of two species, the large and small egrets, have suffered greatly, but they can still be saved. The scarlet ibis and flamingo were really never birds of Florida, and these cannot be considered as real American species. The roseate spoonbill, once an abundant species in Florida and the Gulf States, is not to be found nowadays north of the West Indies and Central America, except as a very rare resident in one or two remote Florida rookeries. The National Association of Audubon Societies has done something in Florida, and the Federal Government controls some breeding

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places, but a great deal remains to be accomplished.

It has not been possible to give any real picture of conservation of mammals and birds in so short a space. The subject is rather large, and the literature greatly scattered. Perhaps no definite impression of any kind has been made on the reader; indeed, conditions are still changing so rapidly that what is true one year is obsolete the next. It will be long before our population has reached its maximum, worked its full havoc on forests, fields and water, and settled down to a more or less permanent system of agriculture, like that seen over most of Europe. But I have shown, at least, that many of our faunal losses were unavoidable, and that others are not yet beyond repair. In conclusion something ought to be said along the lines of correction, an outline of policies which seem to be the most important in saving species actually threatened, or increasing those that are capable of being increased.

First: Provide for the future, even if in small numbers, of the pronghorn antelope by creating an unfenced antelope park of large extent, and if possible save the sage grouse at the same time. Some other matters can wait, but this important

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and unique mammal must receive attention now, else it will be too late.

Second: Make the future certain for a herd of at least twenty-five thousand wapiti, or elk, in the Yellowstone Park region. Just how this may best be accomplished is still undetermined, and the solution of the problem requires the greatest co-operation of the Departments of Agriculture and of the Interior and of the Game Commissioners of the states of Wyoming and Montana.

Third: Set aside a series of national game sanctuaries in the National Forests of the West, in order to provide breeding grounds where game may increase and supply surrounding regions, as outlined by Dr. Nelson, Chief of the Bureau of Biological Survey. At the same time make the Forest Service, with its forest rangers acting as game guardians, responsible for the game in the National Forests. This service will have to co-operate with the states in which the forests are situated, and designate the parts of the forests where hunting may be done and the number of animals that may be taken. The number of licenses to take big game will, of course, have to be limited.

Fourth: Institute a Federal hunting license which shall be required of everyone who hunts migratory birds. The money which is received

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from this source, either directly or indirectly, can be used for the better enforcement of laws protecting these birds, and for the purchase of permanent wild-life refuges and public shooting grounds, as suggested by the Seventh National Conference of the American Game Protective Association. This last seems to me the most important of all, and coupled with the present Federal law it is certain to produce lasting beneficial results to our wild-fowl. The so-called Public-shooting Ground Game-refuge Bill introduced into the Senate by Senator New in 1921 failed to become law, but will no doubt become so later.

Fifth: Create a large sanctuary in some of the drowned lands of Florida, prevent their drainage by land-promotion companies and ensure the continuation of at least a part of the wild life which fifty years ago made Florida famous among lovers of nature. Incidentally such an area would save the sandhill crane, the Florida wild turkey and the Florida deer.

Sixth: Pass a bill to give the United States Commissioners power to hear and determine cases now coming up to the Federal Courts under the Migratory Bird Law, thus relieving those courts from what are merely police court trials, and hastening the hearing. At present the Federal Courts are too

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busy to give immediate attention to violation of the migratory bird laws, and they were never intended to function for such a purpose.

John C. Phillips.

An Encounter with a Grizzly Bear

On September 1, 1907, my brothers Boies and Spencer and I had made a camp on the mountains lying between the Middle and South Forks of the Flathead River in Montana—about five miles south of the line of the Great Northern Railroad. The country was very rough and difficult of access, and we saw no signs of man having been there before, except the recent trail of a small party of the United States Geological Survey in charge of Mr. A. A. Stiles, who had gone there to map the country. Our camp was situated nearly on top of the range, at this place about 7,000 feet above sea level. The highest neighboring peaks were under 8,000 feet. The Geological party was camped about a mile away.

At four o'clock in the afternoon I rode out with Mr. Stiles to see if we could get a deer. About two miles from camp we tied up the horses and set out separately to hunt on foot. I walked along a rocky ridge covered with scattering burnt timber, and when about half a mile from where we started a

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small grizzly appeared, about 75 yards off, coming toward me. He was unaware of me; his head was down, nosing the ground. I shot at him and he ran and rolled down the side of the ridge about 200 yards, and fell dead beside a small creek. I fired two more shots at him as he ran. The country was open; nothing but masses of rocks and naked burnt trees. No other bear was visible.

I went down to the small stream beside which the bear had fallen, put my gun against a tree, and was about to take out my pocket-knife to skin him, when two grizzlies—one smaller than the other—suddenly appeared on the side of the ridge about 30 yards away. They had previously been concealed from my view by the irregularity of the rocky ground.

The larger bear took in the situation instantly. The hair of her back became erect, she growled, crouched and came for me at a lope. As soon as I saw her I jumped for my gun and was able to fire two shots before she was on me; the last shot just as she grabbed me. She did not rear up or strike with her paws, but came at me like a dog and seized with her teeth the mass of muscles in front of the left thigh. This threw me on my back in the creek, and the gun fell from my hand. She

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shook the leg as a terrier does a rat; then seized and crushed my left wrist; then took hold of the right breast and pulled and shook it. She stopped suddenly and stood over me growling. For a few seconds I lay still, and then reached for the gun lying beside me. Thereupon she started again and tried to chew the top of my head through the felt hat, making several wounds to the skull. She then chewed the right side of my face and neck, one of her canine teeth going through the cheek and breaking off one of my teeth. I thought I was "all in," and was impressed by the painlessness of the proceeding, and recalled the experience of Livingstone, who wrote that he suffered no pain at all when he was attacked and chewed by a lion. Again she stopped, and this time I made no movement. She stood there some seconds, then turned, crossed the little creek, and walked up the opposite bank about 20 yards, and fell dying against a tree stump. I saw the blood flowing from her left hip and knew that one of the shots had mortally wounded her.

I recovered my gun and got up and aimed at the third bear, who had meanwhile been standing where I first saw him, growling and whining and with the hair of his back erect. The gun snapped, and on throwing open the chamber I found that

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there was no cartridge in it. I felt for an extra cartridge in my trousers pocket and found none; the two or three that had been there were gone, having dropped out in the scuffle. But the bear did not wait. He turned and with plaintive howls loped off down the ridge.

I was unaware of the extent of my injuries and felt no pain, weakness or shock. I was soaked with water from the creek and was covered with my own blood and that of the bear. I sat down to examine the wounds; felt my pulse, which was good; and found that there was no serious bleeding. The only serious injury was that of the left wrist, which was crushed, and from which a fragment of bone projected. I washed my handkerchief in the stream and wrapped it about the wrist, and walked back to the horses. Here I met Mr. Stiles and together we returned to camp.

I had in camp dressings, bichloride of mercury and instruments, and I carefully dressed the wounds, took a quarter of a grain of morphia hypodermatically and got into my sleeping bag.

The next morning we started at seven o'clock, and under the guidance of Mr. Stiles made for the Great Northern Railroad, about 4,000 feet below us, and not many miles away in a straight line, but much farther as we were obliged to

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travel. There was no trail, and the country was very precipitous and rough,—snow banks, slide rock, fallen timber and underbrush. Much axe work was necessary to get through the underbrush and fallen timber. During most of the journey riding was impossible. We were all day at it, and it was nine o'clock at night when we dropped down to the Great Northern Station Nyack. The station-master and his wife, the only inhabitants of Nyack, gave us supper. In the morning we flagged the train going East and started for home.

The day after this occurrence one of the men whom we had left at camp skinned and examined the bear, and from his report I find that the bear that mauled me had been hit twice. One ball, entering behind the left shoulder and ranging backward, emerged from the left hip, probably cutting the femoral artery in its course. The other shot had broken a hind leg near the paw. The bear evidently bled to death.

The bear first killed was a good-sized two-year-old—two years old the previous spring. The bear that attacked me was the mother. The cubs often stay with the mother for two years or longer, if she fails to have young in the meanwhile. The young one was old enough to take care of itself, and in the past I had shot bears of the

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same size, unaccompanied by the mother. When I shot I thought that it was merely a small grizzly traveling alone. It did not occur to me that other members of the family might be about, or I would have looked out for them. The little bear was in the lead; the mother and the other two-year-old being behind and hidden by the irregular ground. When they struck the trail of the young one that had been shot they followed down the side of the ridge until we saw each other.

The mother was about a three-hundred-pound bear, and all of them were unusually white in color—the whitest grizzlies I have ever seen.

The mother attacked me because I had killed her young and because she had not learned to fear man. She had probably never seen man before. She was in an inaccessible country, rarely, if ever, visited by man. A bear will not always fight for her cub. I have several times seen a black bear run away while her cub was being killed; and though the grizzly is much fiercer than the black, I think that she also would sometimes run after having become familiar with man and his weapons. In the early days grizzlies often attacked man, though unmolested; now they usually get away as soon as they become aware that man is near.

An interesting point in this experience is that

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the bear did not rear when attacking, nor did she strike with her paws. There was no claw wound. The wounds were all made by the teeth. Perhaps the injury to her hind leg prevented her rearing.

Another point of interest is the absence of pain during the encounter. Much sympathy is wasted on the imagined suffering of injured men. Every surgeon knows that acute traumatism is usually painless. The soldier is often unaware that he is shot. Numerous hunters have recorded the absence of pain when chewed or gored by wild animals.

I had thirty tooth-wounds. The muscles of the thigh were crushed and lacerated; the wrist-joint was opened, several of the small bones were crushed and the scaphoid bone was bitten in two, one fragment projecting from the wound; the median nerve was severed at the wrist; the hand had been perforated by teeth in several places; the breast, head, cheek and neck were bitten; and yet when I got up to take a shot at the last bear I felt no pain and was unaware of any injury.

I do not think that I fought back when the bear was chewing me. The attack was sudden, too sudden to feel fear. The whole thing lasted but a very short time. I had no weapons but the gun (a 7 mm. Mauser), and a clasp-knife in my pocket. The bare hands of a man are frail against a bear, and

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the man feels his complete helplessness to oppose such superior strength. It is like a dog with a rabbit.

For many years I had carried in camp a surgical kit, but had never had occasion to use it except for trifling injuries. This time I needed it badly. I sterilized and dressed the wounds most carefully, spending three hours at it. The result was that there was no infection and no sepsis; most of the wounds healed without suppuration; and the final recovery was unaccompanied by physical impairment or disability of any account.

Charles B. Penrose, M.D.

Life and Habits of the American Fur-Seal

Kipling has made the fur-seal a character in literature, and Jordan has told of its life and ways in a manner attractive even to small children; yet if it were not for the widespread use of its beautiful fur, it is doubtful if the average man would know of its existence. It inhabits the open sea and remote northern islands seldom visited by travelers, and popular knowledge of it is limited. Even professional zoölogists may have rather hazy ideas about it, for although every field naturalist has at least a bowing acquaintance with most of our land mammals, very few ever have seen a living fur-seal. Its summer home is in Alaska, and that is now neither unknown nor inaccessible, but one may see much of Alaska without meeting the fur-seal. In fact, if one should traverse all the regular routes along Alaska's coast many times, the chances of seeing it would be slight, except at limited seasons of the year. It is evident, therefore, that although they fall short of reality, books and

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pictures must give to most people all they can ever hope to know of this unusual animal.

Its story has been told many times, but usually in the business-like language and under the uninviting covers of government reports. Moreover, repelling statistics are always a part of it, and supposed disagreements among experts have been magnified, so it is small wonder that confused ideas prevail. In the present article, it is proposed to dwell especially on the interesting life habits of the fur-seal, with only a brief statement of the practical questions involved in its care and preservation as a valuable natural resource. The account is based principally on the author's own experience as a member of an international party which investigated fur-seal matters during the season of 1914.* For many important facts regarding the life history of the fur-seal, however, I am indebted, like other zoölogists, to various investigators, especially D. S. Jordan, G. A. Clark, F. A. Lucas, C. H. Townsend and G. D. Hanna.

* A report of this investigation, which contains a full bibliography of the fur-seal, was published in 1915 under the title "The Fur Seals and Other Life of the Pribilof Islands, Alaska," in 1914. By Wilfred H. Osgood, Edward A. Preble and George H. Parker. *Bull. Bur. Fisheries*, Vol. XXXIV, pp. 1-172, pls. i-xviii, maps 1-24.

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RELATIONSHIPS

Popular conception of a seal is doubtless based upon the characteristics of the common harbor seal of the northern coasts of Europe and America. This animal has but little power of locomotion on land. It may wriggle out of the water and flop itself along for a few feet, but it seldom gets beyond the limits of a return to its real element by a single squirming slide. Many other seals are of this character, but the fur-seal is of a different sort, much less removed anatomically from land mammals. Both fore and hind flippers are very long and capable of such freedom of action that the animal is practically quadrupedal. Although the major part of its life is spent at sea, there are times when it comes out of the water easily and readily, clambers over rough rocky ground, frolics on sandy beaches, climbs high cliffs, and under stress of circumstances it may even travel inland several miles from water. The name "sea-bear," often applied to it, is not altogether fanciful, for it is descended from an ancestor that lived upon the land and that may have been somewhat ursine in general appearance. In its long course of evolution, it may have been, at times, more exclusively aquatic than now, but certain it is that, like other seals, like the sea otter and, for that matter, like

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whales and dolphins, it was once a land animal which gradually became adapted to life in the water. In this process, it has not yielded all, so now it is an animal of both the sea and the land, more aquatic than the otter, but more terrestrial than seals in general.

The name fur-seal can be and is with propriety extended to any of several related species which inhabit southern seas about the coasts of New Zealand and South America, but the fur-seal *par excellence* of the present day is the northern fur-seal of the North Pacific Ocean and Bering Sea. This animal has as one of its prominent characteristics a highly gregarious habit, gathering in great herds at certain times and maintaining some degree of social relation throughout the year. But all the seals of the North Pacific never come together, for they are divided into three distinct groups or herds, each of which acts as a unit in its general movements. Differences between individuals from each of the herds are slight and not recognizable except to zoölogists, but probably they represent incipient species and the isolation which these now have from each other furnishes one of the chief conditions which, if continued for centuries, would permit them to become quite distinct. The three herds are named, in accordance with the ownership

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of the restricted land areas where they spend the summer season, the Japanese herd, the Russian herd and the American herd.

The Japanese herd is relatively small, but under good management has increased in recent years to some 20,000 animals, resorting only to Robben Island, or Robben Reef, a very small area lying off the southern coast of Saghalien Island in the Sea of Okhotsk. Formerly it extended to many of the Kurile Islands and, as it is now increasing, it may soon begin to repopulate its one-time haunts. The Russian herd was considerably larger than the Japanese, and had its headquarters on the Commander Islands, that is, Bering and Copper Islands, which lie off the southern coast of Kamchatka in the western part of Bering Sea. Recent reports of the condition of the Russian herd are not fully available, but it is evident that the unstable political conditions prevailing during and since the great war have been disastrous for it. In 1922, when it should have numbered well over 100,000 seals, it was reported to have been reduced to about 18,000. The American herd is and always has been much larger than the others; in fact, accounts of its former size now seem almost fabulous. Even after liberal discounting for the loose methods of estimating in early days, it is

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clear that this herd once comprised no less than 2,000,000 seals, and although now small by comparison, it is still a wonderful herd of more than 600,000.

MIGRATION

After their gregarious habit, which has been mentioned, the next conspicuous feature in the life of the seals is their long annual migration to and from their breeding grounds. Migration is not an uncommon phenomenon in nature. Among birds of temperate regions it is characteristic of the majority of species. Certain fishes migrate to some extent and even insects include species which move *en masse* from place to place with a degree of regularity. Migration among mammals, however, is rather unusual, although some instances are known, especially in the deer family. But even here, except in the well-known case of the caribou, the movements are limited and directly related to obvious and insistent physical conditions. Usually it is only the short vertical migration of animals inhabiting mountainous regions. The periodical movements of lemmings in northern Europe are too sporadic to be considered good examples of migration. It is safe to say, then, that the best and most remarkable example of migration among

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mammals is furnished by the fur-seal. It is practically the only case which partakes of the mystery and fascination that we find in bird migration.

The entire American herd spends the summer season on the Pribilof Islands, two small islands in the southern part of Bering Sea, about three hundred miles west of the mainland coast of Alaska and nearly as far north of the long curving chain of the Aleutian Islands. These volcanic islands, St. Paul and St. George, appear only as tiny dots on an ordinary map, being scarcely more than a dozen miles in length by four to seven in width. Yet they constitute the only land to which the seals of the American herd ever resort, and so far as records show, the only land to which they ever have resorted. They come to the islands in the spring, remain there through the short summer and depart late in the fall for a long journey to the south. The entire herd does not leave at once, but they travel in large bodies from which individuals are not likely to stray. They go out of Bering Sea through the passes of the Aleutian Islands, and then strike south across the broad expanse of the stormy North Pacific, plowing their course against wind, waves and current with the unswerving directness of a ship guided by compass. Those who have seen them thus migrating, report

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it as a most impressive sight. Far from land, in a vast ocean where man, even on his well-appointed liner, feels to an unusual degree the power of the elements and his own insignificance, he sees these relatively small and unintelligent animals performing a feat which he himself accomplishes only by the exercise of high reasoning powers, and with the aid of delicate instruments and the accumulated experience of centuries.

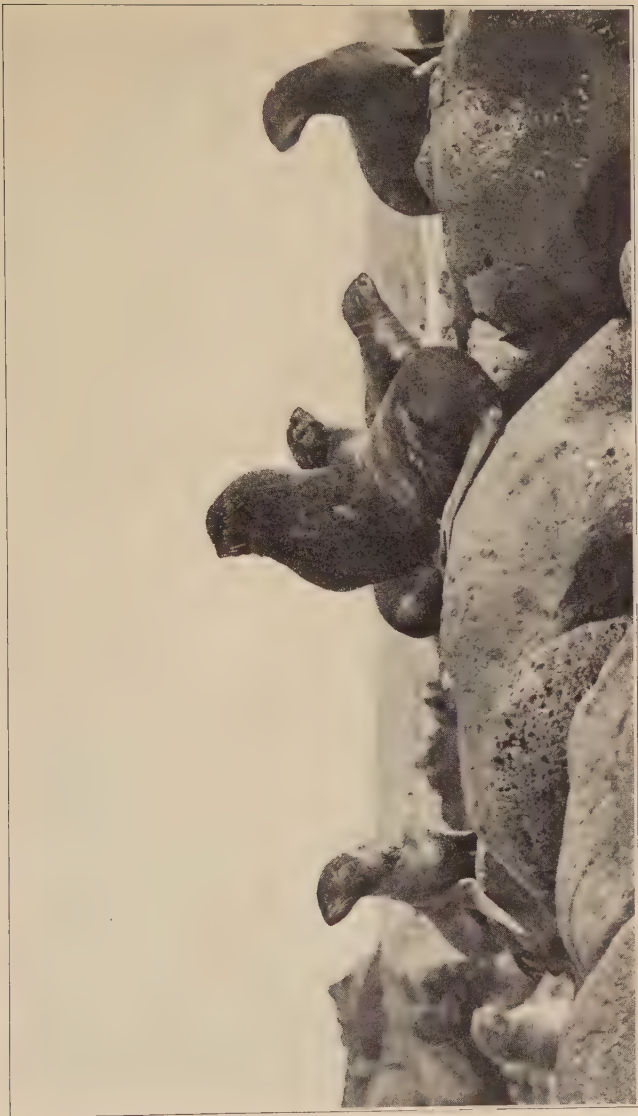
They go south as far as the latitude of southern California, a distance of nearly three thousand miles. To what extent they interrupt their journey to rest or feed is not definitely known, but they make good time, for old females have been seen off the California coast in August, very shortly after they are supposed to begin leaving the Pribilofs. Their winter is spent entirely at sea, about one hundred miles offshore, fishing, disporting in the waves or lazily sleeping. In calm weather they sleep for hours at a time, cradled in the gently swaying swell, lying on their backs with all four flippers folded over their breasts and only the tips of their noses protruding above the surface of the water. This lasts until early spring, when they begin to move north, going more leisurely than on the southward trip in the fall. For a considerable time in February and March they linger in num-

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bers off the coast of Vancouver Island and a little later appear on the so-called Fairweather grounds, along the cold glacier-bound coast of central Alaska. Thence they proceed almost directly to the Pribilofs, again threading the narrow passes in the Aleutians, and reaching their island home by detachments in May and June, touching land for the first time in seven to nine months, and having completed a round trip of not less than five thousand miles.

CLASSES OF SEALS

Fur-seals of different sexes and different stages of maturity are very different from one another, both in appearance and in habits. Their individuality is therefore so pronounced that they have distinctive names, as if they were different species. Although each of these classes of seals is fully discussed later, they must at least be enumerated in advance. The principal ones are the *bulls* or adult males, the *cows* or females of three years of age and over, the *pups* or young seals in their first year, and the *bachelors* or young males under six years of age. Less sharply distinguished, but well recognized, are the five-year-old *half bulls* or males approaching maturity, and the virgin females or those in their second year. The more



HALF BULL, LATE IN SEASON

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pronounced characteristics of the different classes are of habit rather than appearance, but there are some decided differences in size, form and color.

Young seals of both sexes, when born and for the first few months of their lives, are quite black in color and are then known simply as pups. Late in the fall of the first season they acquire a new coat of silvery gray and are then "gray pups." The next season they are "yearlings" and have practically the coloration of adult females. In the second and third seasons the seals of both sexes are still very similar in size and color, but after the second season the female does not grow perceptibly larger, while the three-year-old male continues to increase in size. As a four-year-old, the male becomes somewhat larger but retains the general similarity to the female which he had the previous year. The next year, however, he becomes a five-year-old half-bull, considerably larger, with a thicker neck, and the coarse hair on his neck and shoulders is lengthened into an incipient mane. When six years old he is practically full grown, thick-necked, heavy-maned and weighing several times as much as an adult female. He then leaves the bachelors and frequents the breeding grounds, forming his first harem, if possible. In subsequent years he may become slightly heav-

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ier and his color may change slightly, but from this time on he is a "harem bull" or full-grown male.

GENERAL ROOKERY LIFE

Like the wandering sea birds, the seals come to land only to rear their young, and this is their main concern while there. Irregular rocky ledges or boulder-strewn beaches suit their purpose best and, since ground of this sort is not sufficiently continuous to accommodate the entire herd, it distributes itself in various separate colonies, in each of which the animals are closely packed in a mass known as a rookery. Sixteen of these rookeries are found on St. Paul Island, and six on St. George. Some are relatively small, and others very large, and they shrink and expand with the fluctuations in the size of the whole herd; but with very few exceptions all have maintained their individuality since the memory of man. The names of the various rookeries now in use are chiefly those given them by the Russians, who were the discoverers and owners of our seal islands until the purchase of Alaska in 1867. There are in all twenty-two rookeries, sixteen on St. Paul Island, and six on St. George, and since many of them are referred to by name in the following pages and elsewhere,

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the full list may be given. Those on St. Paul are Kitovi, Lukanin, Gorbatch, Reef, Ardiguén, Sivutch, Lagoon, Tolstoi, Zapadni, Little Zapadni, Zapadni Reef, Polovina, Polovina Cliffs, Little Polovina, Morjovi and Vostochni. Those on St. George are North, Staraya Artel, Zapadni, East Reef, Little East and East Cliffs.

Rookery life has many peculiar features, most of which are directly or indirectly related to the habit of polygamy, which is one of the most pronounced characteristics of the fur-seal. In the spring the old males reach the islands first, and after them come the females, to gather in groups known as harems, each of which is presided over by an old male. These harems vary in size from three or four to forty or fifty or even seventy-five to one hundred females to one male. This is the case even when there is a superabundance of males, although at such times the average size of the harems is likely to be smaller than when males are relatively few. So far as reliable observations go, the average size of the harems has never been less than twenty-five. The old males guard the harems jealously, and fight or skirmish with each other, principally to maintain positions of advantage, but to some extent also for the possession of individual females. On arriving at the

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islands, each old male takes his position on the rookery ground and, at least in many cases, locates on the exact spot he commanded the previous year. This has been well determined by the continued observation of bulls easily identifiable from year to year by distinctive brands, scars or mutilated flippers. At the beginning of the season, therefore, the rookery appears as a stretch of rocky shore with old male seals irregularly scattered about at intervals of twenty-five to fifty feet and extending back from the water's edge at varying distances according to the conformity of the ground. Some of the rookeries occupy only the narrow bases of the cliffs, and here the animals may be strung out in a single line; in other places where the shore rises gently they may be in several successive tiers; and in others where there are broad shelving flats they may reach inland several hundred feet.

Long before any of the females have arrived, a large proportion of the old males are in place patiently waiting, sleeping much of the time, but usually with a figurative eye open, ready to jump up at the slightest sign of trouble. This is during the middle and latter part of May. For the next few weeks more bulls come straggling in from day to day, the later arrivals, for the most part,



EARLY BULL, WAITING FOR COWS

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being younger and less experienced than those that preceded them, for although all are fully mature and much alike in general appearance, the evidence seems to indicate that those which reach the islands first in the spring are the veterans of at least several seasons' previous experience. Those slightly younger come soon after and take such unoccupied places as they can find. By the second or third week in June, the females begin to appear, in small numbers at first, but rapidly increasing until in about ten days' time the rookeries are practically filled. These females, or cows, as they are called, are scarcely one-sixth the size of the full-grown bulls. They become so closely packed together in the harems that they are touching each other and, in many cases, in spite of each bull's efforts to maintain the distinctness of his own seraglio, adjoining harems become merged and the only boundaries are the variable and intangible ones which the respective harem masters seem by common consent and force of circumstances to take for granted. At this stage the harem organization is seen at its best. Each big burly bull, thick-necked, shaggy and defiantly dignified, sits surrounded by a company of sleek, soft-coated and liquid-eyed females, swaying their graceful bodies sinuously from side to side, slowly closing their

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eyes and dozing, or playfully snapping at each other as they variously adjust themselves to their limited space.

The young seals, or pups, are born immediately, or at most within a few days, after the old females come to land. Their coming adds a new and most interesting feature to rookery life. Born into the crowded writhing mass of their elders, they are from the first subjected not merely to jostling and pushing but to good hard knocks which would be difficult to withstand if they were not as pliable and tough as India rubber. Many are, in fact, seriously injured or killed by being trampled by the old bulls, but under normal conditions the percentage of such casualties is relatively small. Within a few days after their pups are born, the old cows begin going out to sea to feed, not in large bodies, but singly and almost surreptitiously, slipping quietly out of the rookery and, after playing about in the water near shore for a time, making out to sea to remain several days. The absence of a certain number is soon evident from the scattered spaces on the rookery ground and by small groups or "pods" of pups gathered together, playing or sleeping while their mothers are feeding. Those that go first return in time to replace those that start later and there is thus established a

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constant interchange of outgoing and incoming cows. The bull takes care that none goes until after the birth of her pup and until after her reimpregnation. These events are separated by an interval of only a few days at most. Hence the period of gestation is approximately twelve months. Since gravid cows continue to straggle in during the greater part of July, pups are being born during all that time, cows are going back and forth to feed and the bulls are alert and active, constantly rounding up their harems, ever jealous and watchful, not only against other bulls that venture abducting sallies, but against the possibility that a cow may slip out to sea before her turn. This period of rookery life is therefore the one of greatest activity, and the middle part of July is spoken of as the "height of the season." At this time, although the little black wriggling pups are much in evidence, not only to the eye but to the ear, for they are constantly bleating, still the harems are fairly distinct and have some of their original character, with the bull in command and the cows gathered about him.

In the latter part of July and early in August, most of the pups have been born and the discipline of the harem is relaxed. Gradually the bulls begin to retire and the cows to wander at will. Disor-

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ganization proceeds rapidly and save for a few bulls who linger with one or two late-coming cows, the big roaring harem masters are no longer in evidence. The breeding grounds, which have had a strictly business administration up to this time, become playgrounds where everything is easy-going and carefree. Lines which formerly could not be crossed without bloodshed are no longer regarded, and cows, pups, bachelors and virgin females mingle freely. Bachelors of from three to five years come piling in from the hauling grounds and make ludicrous attempts to lord it over the females after the manner of the old bulls. Their impertinences are snappishly resented by the old cows but occasionally they succeed in securing temporary guardianship over several two-year-old cows, only to be dispersed and scattered by some wandering bull.

After the "breakup," as it is called, there follows a period of some weeks while the cows continue to nurse their pups and the pups begin to swim. Thereafter all classes of seals roam about the islands with little or no restraint, going on fishing excursions, coming to land whenever they choose, playing, sleeping, feeding and growing fat until late in the fall, when they start on the long journey to the south. The season on the islands

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is thus marked by constant change, and the observer finds himself carried along with it, so absorbed in each day's novelties that the passage of time is unnoticed. First the arrival of the old bulls, then the coming of the early cows, followed immediately by thousands more, the formation of the harems, the birth of the pups, the height of the season with its bedlam of noise and apparent confusion, the retirement of the bulls and breakup of the harems, the thousands of pups swimming about the islands, and finally the gradual diminution of the herd as it ebbs away to the south.

THE BULL

Of all the classes of seals, it can scarcely be gainsaid that the ponderous old bulls are the most interesting. The bull is probably so called on account of his roar, which has some resemblance to that of a bovine bull; but the bull seal's appearance is more like that of a grizzly bear than of any other familiar animal. He is nearly or quite as large as a grizzly, and not dissimilar in color, especially on the neck and shoulders, where his thick mane is commonly dark brown in color and distinctly "silver-tipped." Like the grizzly, it is chiefly as a furious fighter that he is known and, although some qualifications may be made, it must

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be said that his reputation is well deserved. At times he is not a very fair fighter, but since he is only a dumb brute this cannot be seriously held against him. Fighting is his business and nothing else matters. Hence it is not strange that he should adopt a ruthless policy of frightfulness and carry it out, not only in his encounters with his equals in strength, but also in his relations with his own consorts and his own offspring. His natural endowment for this is very great. His relatively great size and strength, his heavy bellowing voice, gleaming teeth, blazing eyes and generally ferocious demeanor are well calculated to instill fear and submission. During the breeding season he is belligerency incarnate, practically indomitable, but although he will fight well and hard, to the death if necessary, a great deal of his energy is expended in pure bluff. For this purpose he has a varied assortment of menacing attitudes and shifty tricks for intimidating young bachelors and other bulls.

The same tactics are employed against man, and it is perhaps owing to their convincing nature that, in all the years of sealing on the Pribilofs, very few injuries to men have been reported. Early in the season, when the bulls are alone on their stations, they rise and roar threateningly if a man appears in sight. If the man goes no nearer than

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fifty yards, the bulls eye him malignantly and roar some more but do not as a rule leave their stations. Should the man continue toward one particular bull until within twenty yards, the animal is likely to make a short rush at him, starting with great fury but ending after two or three slumping lopes, proving that it was only a feint. Then, however, if the man has stood his ground and has a cool head and confidence in the nimbleness of his feet, he may cautiously advance to within fifteen feet before provoking another charge. This time the bull comes on as before, roaring and snorting, and the man perforce turns and runs at top speed. The bull will continue the pursuit nearly twice as far as in his first sally and, although his speed is not equal to that of the man, he has the advantage of the start and the rough ground, so that sometimes he may brush the man's coat tails. In these cases there can be but little doubt that he means business, although it may be uncertain as to how he would act if the man did not run but continued to stand his ground. When two bulls charge each other they will often turn aside or stop abruptly just before the point of contact and, although it is possible to entertain a theory that a bull might do the same with a man who unflinchingly presented a bold front, no one has yet been found willing

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to put it to a thorough test. The strength of the animal is obviously prodigious and his long canine fangs are cruelly sharp and easily capable of slashing a man to shreds. Several instances of injuries to natives have occurred but no fatalities so far as known. In one case a man was seized from behind, mainly by his clothing, lifted clear of the ground and tossed backward over the bull's head, fortunately on clear ground from which he made his escape practically unhurt. This took place while natives were driving some younger seals among which a few bulls were accidentally included.

All things considered, it is probable that the bull seal is not lacking in courage or determination and it is possible that some of his feints and bluffs are due merely to his extreme reluctance to leave his station unguarded, for if he pursues one adversary too far another is likely to slip in and settle down on his chosen ground. The instinct to stick closely to his own spot is one of his strongest characteristics. Having taken his station, his one idea seems to be to hold it at all costs, and man or beast that threatens it does so at peril of his life.

One of the so-called bluffs between two bulls is an interesting and often an amusing procedure. It

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generally starts from some little disturbance or change in relative position suggesting encroachment, when, with a preliminary roar, one of them rushes forward and the other instantly accepts the challenge. With an apparent determination, only to be justified by a desire for mutual annihilation, the two old fellows come on full tilt, loping and slumping over rough, irregular rocks and scattering, brushing aside or crushing any cubs or pups that may be in the way. At such times they utter a peculiar rapid staccato coughing noise, which reminds one very much of the "put, put" from the exhaust of a gasoline engine. Meanwhile their mouths are open, teeth gleaming, jowls dripping, and their whole expression as intensely malignant as they can make it. Suddenly, however, they stop short within a few feet of each other, flop down on their chests, shoot their heads forward, puff in each other's faces with a ferocious glare, and then as if by magic their whole expression changes, their mouths close, their eyes soften, they draw themselves up stiffly to their most nearly erect attitude, avert their heads, and remain poised for an instant in a tremendous effort to be dignified, after which they shuffle backwards a few feet and then calmly amble back to their respective positions as if nothing had happened.

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Encounters of this sort are mostly between regularly stationed bulls of approximately equal strength and experience and they may take place either before or after cows have begun to arrive. They serve to give to each bull a clear area from fifteen to forty feet in diameter in which to accommodate the incoming cows. This position is all-important to him, far more important than any individual cow. The best stations attract the greatest number of cows and it is this rather than greatly superior fighting prowess of the bulls that determines the size of the harems. That there is any serious contest in originally securing the better positions is not evident, for it seems to be largely a matter of priority. The first bulls to come in the spring are all mature and experienced but, although some obtain much better positions than others, each appears satisfied with his own, and his dominant instinct is to protect what he has rather than to dispossess his neighbor. The late-arriving bulls, finding the front positions taken, settle about the rear and ends of the rookeries and, at least for a time, seem to regard their inferior places quite as highly as the more favored ones.

As the season advances, and especially if bulls are in relatively large numbers, those in the rear find themselves without cows, while in front of them

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harem life, with all its activities, is at full tide. They still show a tendency to hold fixed positions but are very restless and constantly make attempts to abduct cows from near-by harems. These are the bulls rather inaptly called "idle bulls." As a class they are younger and less sophisticated than the harem bulls, but many are such magnificent physical specimens it is hard to believe they could not defeat some of the harem bulls in open combat if not handicapped by position and the lack of an intangible nine points of confidence and determination which seem to be given by possession. Sometimes they will meet the rush of a harem bull and hold out for the preliminary rounds of some real fighting, but they generally admit defeat and retire long before they are either exhausted or seriously injured. Their rôle during the height of the season is that of the hanger-on waiting his chance. From time to time some of them are able to obtain a few cows when the harem masters are too busy to give immediate battle, and later they secure permanent possession by edging away to such a distance that they are secure from further attack save from their fellows. When the idle bulls are numerous, however, the majority are unable to form harems. Among themselves they do considerable jockeying and skirmishing and altogether

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they are a source of disturbance and commotion throughout the season. It has been thought that they form an unnecessary element in the herd and a measure of the inefficiency of nature. To a considerable extent this seems to be true and, as in so many other cases where the reproduction of animals is concerned, they confirm the statement that "nature is extravagantly wasteful and frightfully cruel." Still it is only an excess in the number of idle bulls that can be looked upon as wholly undesirable. In the writer's belief, it is one of their functions to serve the two-year-old virgin cows. These cows as a class do not come into the rookeries until very late in the season, at a time when most of the harem bulls have retired and completely lost interest in the other sex. Hence the presence of a reasonable number of idle bulls is a guaranty that these cows will be cared for.

From what has been said in the foregoing it should not be inferred that all contests between the bulls are merely light sparring matches. Practically every old bull bears the marks of battle and it is evident that with sufficient provocation, and under the right conditions, fierce struggles ensue. During close observation of the herd in the breeding season of 1914, however, only one real finish fight was seen. This occurred early in the season

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when harem formation was only partly completed. The participants were two bulls occupying adjoining stations. One of them had already attracted about a dozen cows while the other was still waiting for his first one. The bull without cows was obviously not of the idle bull class, for his situation was such that cows were practically certain to come to him in due time. My sudden appearance on a low bluff above them frightened the cows and one of them made a dash for the water some twenty feet away. The bull lunged after her and continued pursuit even for a few feet into the sea. This left the harem quite unguarded and the opening was altogether too tempting for the near-by bull to resist. Therefore, he calmly took possession, first sniffing and nosing among the cows a bit and then settling in his position with an air of unconcern as if he had always been there. Meanwhile the first bull had left the truant cow and was returning in no uncertain manner. His every movement indicated that he meant business without delay. Still, up to the last minute the interloper maintained his nonchalance, so obviously assumed that it was ludicrous. When they met he instantly changed to a properly ferocious defensive attitude and for a short time it was nip and tuck between them. Their first move was to shoot their heads

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forward at the base of their opponent's front flipper, the object being to cripple this member, so important as a lever for moving the body. The quick darting of the head, which is also used in their bluffing tactics, is a very characteristic motion, and for such ponderous, lumbering animals seems incredibly swift. It is, in fact, suggestive of nothing quite so much as the strike of a coiled snake. Evidently it is a highly specialized habit developed through a long line of fighting ancestors. But as the thrust is perfected, so is the parry, and in the case of our two bulls neither struck his mark. Each was aware of the other's intent and shifted his threatened member, receiving the blow in his tough neck and chest. Both got a hold immediately and began writhing and lunging until hide and flesh gave way. Losing one hold they soon got another and, as they rolled about among the rocks, it was difficult to see that one had any advantage over the other. In the beginning several of the cows were roughly forced aside, but few of them moved voluntarily and none showed interest in the combat. Finally, the contestants worked themselves into a position in which the head of one was near the hind quarters of the other; but while one gripped merely a mouthful of hair and hide, the other was ripping and tearing at the

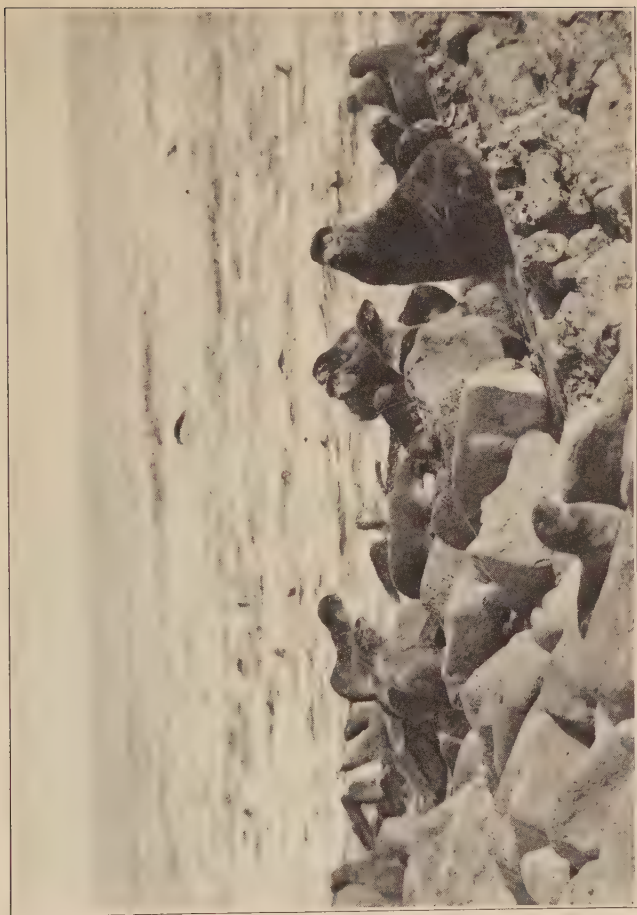
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groin of his adversary in a way that threatened to pierce the abdominal wall or to tear the testicles from place. Only a short time after this hold was obtained the bull thus at disadvantage relaxed and admitted defeat by turning, pulling himself out of the other's grip at whatever cost, and moving away. Then it was seen that the victor was he who had the harem in charge in the beginning. The terrific onslaught of these two bulls and their continued struggle with each other for at least five minutes would seem to indicate that fatal injuries might well be received in fights of this kind. In a few instances dead bulls have been found so covered with wounds that there was little doubt they had caused death. Whatever pain may be suffered from the cutting and slashing they receive is never evidenced by any action on their part. They never lick their wounds nor give the slightest indication that they are conscious of them. There is scarcely a wince at the time they are inflicted and later, when salt water splashes into bleeding, quivering flesh, total unconcern is the invariable rule.

The extraordinary vitality and endurance of the bull seals are exemplified in various ways but in none more strikingly than in their long-continued strength and vigor without food. During the entire

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breeding season they have not so much as a mouthful to eat. Eventually they show the effect of the prolonged and absolute fast, but their relative superiority to it is practically unparalleled among mammals. The period extends from six to ten weeks and, although observations as to its maximum for a given individual are not at hand, it is certain that most of them fast at least seven weeks and probably some do for nine weeks, or from the first of June to the first week in August. Not only do they abstain from food but to a large extent also from sleep. Strict vigilance and constant physical exertion are theirs day and night from the beginning to the end of the season. The harems are rarely quiet and, although the bull will suddenly flop himself prostrate on a rock and take a wink of sleep when he has a good opportunity, he is active most of the time, loping back and forth, clambering clumsily over big rocks, rounding up his harem, quieting this and that restless cow, or making lunging threats, now at young bulls or bachelors which appear in front at the water's edge, now at idle bulls in the rear, now at bulls of adjoining harems. When there is added to all this the strain of continued sexual excitement and the service of cows daily, the act of coitus itself being a laborious and protracted process, it is seen that the



HAREM, LATE IN SEASON



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vitality of the bull seal would be remarkable even if he were well fed every day. His fast is of course necessary to the maintenance of the harem system, for, if he left to feed for a single day, the best fighting bull in the herd would have small chance of reassembling even a fraction of his harem on his return. Hence he must stay and attend to business until the end. As the season nears its close, however, he begins to show the effects of wear and tear. At the beginning he is in magnificent physical condition, full-bodied, thick-necked, quick-moving, fat, arrogant and vigorous. Little by little he draws on his reserve fat and steadily becomes thinner and thinner, until at the end he is scarcely more than a shadow of his former self. When he finally retires from the breeding ground he is dejected and listless and, though he may glower and roar disconsolately at a man, he has no desire to charge or fight and beats a retreat when he is approached. He hauls back to the grass behind the rookery, and there lies down to sleep continuously for several days, after which he goes out to sea to feed and recuperate. Thereafter for some weeks he returns to the islands occasionally but always to the hauling grounds with the young bachelors, to whose sleek, fat bodies his gaunt form and ragged pelage offer a striking contrast.

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THE COW

In almost all characteristics the cow seal is the antithesis of the bull and, although her life has its perilous adventures, it is, as compared to his, relatively prosaic. In size she is scarcely one-fourth that of the bull and in disposition she is mild and gentle. Her weight is from 60 to 80 pounds as against 300 to 400 for the bull. She is called a cow apparently only because she is the consort of the bull, for there is nothing cow-like about her, unless it be her voice, which suggests the bleat of a half-grown calf. Her femininity makes itself apparent in various ways. Except in extreme age she is always sleek and trim in appearance, and her movements are lithe and graceful. Her conduct in the harem is for the most part exemplary. On entering it she sometimes falters a bit on the threshold, and shows some coyness, so to speak, but once in, she is thenceforth meek and submissive to the will of her lord and master. Her coming in is wholly of her own choice and her mating instincts are obviously of the Shavian variety. There are no grounds for believing that the cows congregate with the finest bulls or that the bulls receive the cows and escort them into their harems, meanwhile fighting off other bulls. The cows do show a tendency first to come to the most central

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or favored locations and later to the larger gatherings of their own sex. On reaching the islands in the middle and latter part of June, many of the cows may remain in the water for some time before coming to land. All are pregnant, however, and their condition impels them to shore without great delay. A few are obliged to land in advance of the main herd, but finally the great majority come in with great rapidity, so that the harems are filled to overflowing within a week's time. The rush is so great at this time that, so far as the observer can judge, they must take whatever places they can find. At the beginning, cows often may be seen to come to the edge of the shore, draw themselves partly out of the water and peer into a near-by harem only to turn and slink back into the water, but these actions are plainly due to coyness and timidity. Sometimes a bull will advance to meet such cows, but in the majority of cases this seems only to make their flight more certain. Usually the cow slips quietly into the harem and is not noticed by the bull until she is well settled in place. Then, at least in some cases, he may make his way to her with more or less pomposity and greet her by touching his nose to hers several times and at intervals shaking his head very briskly and uttering a peculiar satisfied grunting noise which

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might be regarded as having a sensuous quality. Not infrequently a cow is seen to take her place in a harem at a time when its great Mogul is fast asleep and wholly ignorant of the addition to his seraglio.

The timidity of the cow often leads her to attempt a return to the water at sight of a man, but the watchful commander of the harem seldom permits her to accomplish this purpose. Her respect for him is instinctive and as a rule she only starts up and immediately settles back in place at a threatening look or movement from him. In case she actually breaks through the cordon, he follows with great energy and, unless she has an exceptionally good start, catches her at most in the shallow water within a few feet of shore, beyond which he will not go. Generally she stops just before the point of capture and turns to face him. Then while he fumes and blusters she plies him with feminine blandishments, snuggling up against his broad burly breast and rising to her full height to bite solicitously at his neck. This seems to have the desired quieting effect and the performance continues while he works himself to a position between her and the water and then gently and gradually pushes her backward toward the harem. If she fails to turn in her flight, however, he seizes her

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viciously and drags her back over the rocks or even picks her up bodily and flings her about with no regard for consequences. Not infrequently, therefore, cows may be seen with severe lacerations due to this maltreatment.

The cow lives to an age of ten to fourteen years, but while the bulls do not breed until six or seven years of age, the cows come into the harem in their second season and produce their first pups when three years old. Hence, at the rate of one pup a year, each female surviving to breeding age has a potential productivity of eight to twelve pups. Her value in terms of money, therefore, is almost as definite as that of any domestic animal and the wisdom of preserving every cow to live out her full life is obvious.

After the birth of her pup and her reimpregnation, which follows at most within a few days, she is free to leave the harem at will. Since her growing pup demands much rich milk, she makes frequent excursions to the open sea to feed, often being absent several days and going from fifty to one hundred miles from land. Her food consists of squid and various fishes. So far as known, although the total quantity consumed is enormous, it includes only an exceedingly small and quite negligible number of fish which are of use to man.

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Although Bristol Bay, which is famed for its tremendous catch of salmon, lies just east of the Pribilofs, the mother seals do their fishing mainly to the westward and southward, catching pollack, rockfish, sealfish and other surface inhabiting species of no present commercial value. One of these, the so-called sealfish, is an inhabitant of the open sea, and was quite unknown to man until its bones were discovered in large numbers in the stomachs of the seals.

The movement of the cows back and forth from sea to land assumes large proportions at the height of the season and it is quite impossible to follow any one individual through the various incidents and activities of her round trip; but by observation of different individuals at different stages a fairly accurate idea of the usual procedure of each is obtained. The cow on first taking to the water gives abundant signs of pleasure at again being in her favorite element. She immediately rolls and turns, twisting and gliding here and there, apparently enjoying her freedom thoroughly. After being on land for some time, her coat becomes entirely dry and particles of sand become lodged in it. Hence she does a great deal of rubbing and scratching while she is in the water fronting the rookery. No part of her body fails



COWS ON ROCK NEAR ROOKERY

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to receive attention and so persistently does she keep at it that the presence of some irritating parasite is suggested, but nothing of the kind has been found. In the water as well as out, the movements of the cows are exceedingly graceful and, even in these periods devoted to scratching, they seldom take a distinctly awkward attitude. Often several of them will haul out momentarily on a spray-washed rock and, after solemnly rubbing their sides with their flippers, sit there like grayish, bronze statues, their wet coats smooth and glistening and every line of their forms easy and lissome.

Besides the cows that are just starting out to feed, it is probable that the great number constantly playing about in front of the rookeries includes many that have just returned from the open sea. It is thought that these returning cows remain in the water until their food is fully digested and, from the exceedingly small, almost negligible, quantity of excrement found on the rookeries, there seems little doubt that this is the case. During the greater part of the breeding season, therefore, not only the rookery ground but the water in front of it is teeming with seals, most of which are the sleek graceful cows. As they glide swiftly through the water, passing back and forth, playfully chasing each other, twisting, turning and

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rolling in spirals, they often throw one of their front flippers vertically out of the water. Its contour and its smooth black surface give it a great resemblance to the fin of a large fish; hence it is small wonder that these water front cows are known collectively as "finners." In making their way in and out of this area of finning, at least on the seaward side, the cows are very unobtrusive and except at considerable distances from the islands are seldom seen en route to or from feeding. Doubtless many make this part of their journey at night, but that all do so is not probable.

Just how each returning cow finds her own pup among the thousands on shore is not wholly clear, but it is evident that she does so in practically all cases and it is probable that her success is due to a combination of various instincts and circumstances rather than to the possession of any power bordering on the occult. She usually comes out of the water with an air of nonchalance as if she had nothing on her mind and no special object in view. She stops at the water's edge to rub and scratch for a few minutes, then ambles slowly a few yards in no particular direction, stops again, and perhaps lolls her head back to take a few winks of sleep; and so she wanders on, slowly and indifferently, until the observer begins to feel that she must want

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to postpone meeting her offspring as long as possible. Occasionally she will call and perhaps some hungry pup not her own may answer and start toward her, but she evinces not the slightest interest in him unless he actually reaches her side, when she snaps at him and goes on. These preliminary actions of the cow seem to indicate that her main dependence is upon being in the right locality. It is probable that the pups remain very close to the exact spot at which they were left, and the seal's instinct to return to a specific place is of course one of its strongest characteristics. Very good evidence of this is seen during the process of counting the pups in enumerating the herd. This is done by forcing all adult seals into the sea and then driving the pups in successive groups to new ground. It literally moves each rookery a short distance along the shore, causing every seal to change position and creating a disorganization and general commotion such as to seem almost incapable of readjustment, yet within half an hour after ten thousand or more seals of a single rookery have thus been scattered and displaced one finds the whole rookery quite as if nothing had happened, the cows peacefully sleeping or nursing their pups and the pups whose mothers are at sea gathered in pods playing or sleeping. No exact check on the

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perfection of the reorganization is possible, but the relative positions of the seals seem practically unaffected and the belief is easily induced that both cows and pups seek their own particular spots rather than each other. Cows which have been on shore some time without encountering their pups, may begin to show more definite signs of searching for them, calling more frequently for them and perhaps even nosing about among pods of sleeping pups, but this seems to be exceptional. Final union of mother and child is doubtless effected by the combined senses of hearing and smelling, but even at this juncture the cow is relatively passive and undemonstrative, while the pup seems to expect nothing more from her than satisfaction of his physical want.

The cow rarely displays any feeling for her pup. She permits him to nurse, but beyond that he must fend for himself. If he is jostled about, she shows no disposition to interfere, although it is not unknown for a cow to pick up a pup and carry it a short distance. Whether this is for her own convenience or his, however, may be open to question. When approached by a man, she will forsake him at any time and flee to the sea unless restrained by a bull, and altogether she gives almost no indication of that mother love so common in animals.



PUP NURSING

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THE PUP

Although its sire is a "bull" and its mother a "cow," the young fur-seal is called a "pup," not even puppy, merely pup. It is only necessary to see one to appreciate the fitness of the name. Its hair is short, crinkly and glossy black; its face is wrinkled and its expression is most serious; altogether it suggests the young canine very decidedly. The pup's voice, however, is not a yap, but a bleat, like that of a young lamb. So close is the resemblance, in fact, that some years ago a ewe sheep that had been brought to the island to furnish winter mutton for the government agents, broke from its enclosure and, following the sound of the bleating pups, made its way to one of the rookeries, where it narrowly escaped death from an infuriated bull.

After the early part of the season, no picture of a seal rookery can be realistic without including a very large number of pups. They are everywhere from the water front to the caves and crevices at the extreme rear of the rookery. Like the young of many animals, they have cute little ways, running from the ludicrous to the pathetic, which tend to make them favorites with the observer. They are always appearing in unexpected places and doing unexpected things, so from the beginning to

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the end of the season they are a source of interest and amusement.

So far as known, each cow gives birth to one pup annually, and only one, for in all the thousands and hundreds of thousands that have seen the light since the herd came under the eye of man, no case of twins has been observed. At birth they weigh about twelve pounds each and in the four months or more that they remain on the islands they grow so rapidly that before starting south with the herd in the fall they may weigh as much as fifty pounds. The head is disproportionately large at first, but this condition does not last long and soon they are nearly the same diameter from end to end, shiny black cylinders, fat as butter, and interested principally in getting fatter. When their mothers go out to feed, the pups gather in small groups or "pods," at one side of the harems and alternately sleep and play with each other until the cows return. As the season advances, these pods of pups increase in size until it is not uncommon to find from fifty to a hundred pups fast asleep in a mass that is almost solid, but with no two individuals in the same attitude. When such a gathering is rudely awakened, it becomes a writhing, squirming conglomeration that is scarcely to be described with-

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out resorting to some of the less attractive members of the insect world for comparison.

Thus the pup learns early to shift for himself and, as he continues to grow, his elders, both male and female, show him a mild tolerance but scarcely more real consideration than they do each other. Whether he really learns anything in the strict sense seems doubtful. The fur-seal, from birth to old age, shows scant intelligence or individuality, but his interesting life is governed to an unusual degree by highly specialized instincts. So the pup is a little automaton whose actions are seldom more than responses to strings pulled by the hand of heredity. Even in his play, he begins at once to forecast his individual future and to recast his racial past. As he tussles with his fellows, he instinctively feints and parries in awkward caricature of his elders in their more earnest conflicts. He takes refuge from man when possible by scuttling into the nearest crevice in the rocks, but if cornered, turns and defends himself, snarling and biting at shoes or trousers with all his small power.

Even in beginning to swim, the pup depends wholly upon himself. He doesn't take to the water like a duck, however, and during the first weeks of life will not go into it unless absolutely forced.

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Possibly this has some relation to his terrestrial ancestry, but it doesn't mean that he needs to be taught to swim. If thrown into the water when only a few days old, his relatively large head is a disadvantage, and he swims with a little difficulty, and appearing not to enjoy it, but he does swim. A few weeks later, pups that have never been wet, on being driven into the water, swim readily and easily. At the age of five or six weeks, they begin to swim voluntarily and as the season advances they spend more and more time in the water, gradually extending their excursions until for some weeks before leaving in the fall they encircle the islands day after day swimming, as if against time, in long lines or great schools. Thus they develop the strength necessary for the coming journey to the south. During the entire season, however, they do no foraging for themselves but subsist entirely on their mother's milk, the richness and abundance of which is attested by their rapid growth in size and strength. In pottering about the water's edge they often pick up and swallow small pebbles, and in rare cases bits of crustacea or seaweed have been found in their stomachs, but these seem to be accidental inclusions. There is no evidence that the cows assist their young in any way after leaving the islands, so the pups doubtless begin their fish-

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ing as they do their swimming, instinctively and without instructions. Of their life during their first season at sea, little is known except by inference. That it is a hard one is plainly evident from their condition when they return the following summer. At this time they show considerable growth in length but carry relatively little fat and may weigh no more, or sometimes even less, than when they first left the islands.

The principal natural enemy of the fur-seal is the killer whale, and the little pups on their first journey are the greatest sufferers from its voracity. The killers have been seen to dash into a school of small seals and literally cut them to pieces, tossing them into the air, and rushing about in a frenzy. The ease with which the powerful cetaceans prey upon the defenceless pups leads to the belief that the total number destroyed by them must be very large. Positive evidence, however, is rather fragmentary and it seems strange that killers do not hover about the Pribilofs and in the wake of the migrating seals much more extensively than they are known to do. Small schools of them are seen near the islands each season but actual observations of their depredations are rather infrequent. Nevertheless, the remains of as many as twenty-four pups have been found in the stomach of a

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single killer and, since other known causes of mortality constitute but a small fraction of the total, the killer must be credited with great destructiveness. This total mortality of seals in their first year cannot be ascertained accurately, but collective evidence indicates that it may be as high as fifty per cent. Moreover, only about two per cent of this is directly traceable to causes operating while the seals are on land. At times the little pups have died in numbers as a result of being affected with a parasitic worm known as *Uncinaria*. Many also died of starvation during the years when for lack of legal restrictions female seals were killed at sea, leaving the pups on land to call in vain for returning mothers. Fortunately, neither of these causes of death is now effective and it is to be hoped that good legislation will serve as a perpetual ban to them. A considerable number of the younger pups are killed by bruising and trampling due to the rough methods of the old bulls and this number may be increased by failure to keep the number of idle bulls within reasonable limits. Others, in slight but not unappreciable numbers, die 'aborning,' although they are not stillborn in the usually accepted sense of the word. The principal cause of death at the time of birth is what

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has been called *Asphyxia neonatorum*, that is, smothering in the foetal membranes. This was first noticed and investigated by Dr. M. C. Marsh, but, although he was able to demonstrate its occurrence in a number of cases and although it cannot be prevented, it is such a relatively small factor in a large herd of seals that it is not to be regarded as a serious matter.

Still another possible cause of slight mortality is bruising the head against rough rocks during delivery. In the initial stages of his entry into the world, the fur-seal pup receives a series of bumps and whacks that seem almost prophetic of the buffeting which ensues in his after life. He is born head first, as might be expected, and there is a considerable interval between the delivery of the head and the body, during which time the cow may swing herself about from side to side or in a circle at tremendous risk of battering the head of the poor half-born pup against a rock. This was the case in the one complete birth to which I was witness and the limited observations of others indicate that it was no exception.

Although pups are born in great numbers every day during the breeding season, one may spend many hours in close watch of the rookery without

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detecting a cow actually in the throes of parturition. Hence, but few observers have testified to its hazardous conditions. The late George A. Clark, whose experience with fur-seals was unequaled, wrote of it as follows: "In bringing forth her young the cow seems to take no thought as to her place. One pup was observed to be born on a slanting rock down which it slipped as soon as released. The mother reached down and lifted it up to her side only to have it slide down again. She repeatedly lifted the pup back, and finally changed her position. Another cow was seen with her new-born pup on a narrow shelf which was scarcely large enough for herself, and from which the pair were in constant danger of falling off. The pup must have been born there, but how is a mystery."

Taken all in all, therefore, the life of the fur-seal is a rigorous one. Death in violent form is hovering around him from the time he first draws breath until he has braved the stormy North Pacific for many weeks. Through it all, however, he goes as imperturbably as a sleepwalker, seldom showing any indication of fear or pleasure and merely reacting as other pup seals have done so long as there have been pup seals.

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THE BACHELOR

In his second year, the male pup becomes a bachelor and a bachelor he remains until in his fifth year he reaches a size and dignity which commands the somewhat limited respect indicated by the name half-bull which is then given him. At six years of age, or seven at most, he becomes a mature bull and a harem master. Until that time, however, he is rigidly excluded from the breeding grounds and, as bachelors are supposed to do, he leads the life of a jolly rover. True to their gregarious instinct, the bachelors gather in herds and when on land occupy separate areas known as hauling grounds. These hauling grounds may be sandy beaches or grassy hillsides, but here again the gregarious tendency is manifest, for they are located as near as possible to the breeding grounds, and usually are practically continuous with them. Throughout the summer the bachelors come and go, alternating between land and water. They have few cares or responsibilities and are free to go to sea and feed, or to remain on land and sleep or play at rough and tumble with each other. They stretch out at full length on the sand and sleep for hours, often lying so close to each other that their bodies touch. Since many of them

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are out at sea at all times, it is not possible to enumerate them and even a count of those on land cannot be made with accuracy on account of the movement of various individuals or small squads from one part of the hauling grounds to another. Unlike the grown bulls, they never show fight but run for the water at sight of a man. When suddenly frightened they dash pell mell and headlong, tumbling over each other in their haste to get to the sea. They remain sleek and fat throughout the season and doubtless feed with more or less regularity, although their stomachs are always empty when on land and exact evidence as to their movements is fragmentary. They are known to pass back and forth between St. Paul and St. George islands, at least to some extent, and no doubt they move also from one hauling ground to another. The number on any particular hauling ground varies from day to day but not very widely.

At two and three years of age, the bachelors resemble the cows quite closely both in size and color. At four years they are larger and especially longer but otherwise much the same. At this age, however, maleness becomes more evident in their actions and they begin to ape the manners of the half-bulls and idle bulls more continuously and to

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indulge in juvenile gambols less frequently. From time to time they swim along the front of a breeding ground and, if circumstances are propitious, may haul out at the water's edge and peer up at the harems inquiringly or perhaps wistfully, but only for a moment, for at a roar or the slightest menacing movement from one of the big bulls they slink back into the water at once. If any motherless pups wander to the edge of the breeding grounds or on to the hauling grounds, the bachelors are apt to make free with them and even in their play with each other the instinct to round up several of their smaller fellows and hold them together in harem fashion is frequently evident. At five years of age, they become heavier and thicker, especially about the neck and shoulders, and the hair of the neck becomes coarse and mane-like. As half-bulls they then spend more and more time lingering about the edges of the breeding grounds, but they still mingle with the bachelors to a considerable extent and haul out with them to lie and sleep. After the old bulls retire, as elsewhere described, the bachelors troop to the breeding grounds and wander among the cows and pups without restraint other than the disdain of the old cows, which is often ridiculously marked.

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SEALING METHODS

Since the discovery of the Pribilof Islands by the Russians in 1786, something over 5,000,000 fur-seals have been killed on the islands for their skins and of these about 2,700,000 have been taken since the purchase of Alaska by the United States in 1867. From these the government has received a revenue of over \$10,000,000 in addition to the very large profits obtained by the private companies to whom for forty years the government leased the sealing privilege. Further large sums have been involved in marketing the raw and dressed furs and altogether the fur-seal has been a factor of no small importance in the world's commerce.

The killing of these harmless and defenceless wild animals is perhaps not justified by actual need. Still, their skins are put to a useful if not absolutely essential purpose, and when it is understood that the killing can be as well regulated as that of domestic animals used for food no reasonable objection can be made to its practice under proper restrictions. During American management of the Pribilof herd, females have not been killed on land intentionally and the seals taken have been young bachelors of two and three years of age. A large proportion of these are superfluous for

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breeding purposes, since they are born in equal numbers with the females and by the habit of polygamy one male suffices for many females. Hence their elimination in fairly large numbers has no effect on the growth and continuance of the herd.

The young males are naturally segregated on the hauling grounds and when they are desired for killing, the sealer simply runs between them and the water. On being thus cut off from their retreat, they start up, huddle together, and then move inland with but little urging. They may be guided in any desired direction and, since they proceed more slowly, are easier to manage than any domestic animal. They are driven varying distances from a half a mile to several miles to the killing grounds near the villages. There they settle down and wait patiently for hours until their time comes. The ease with which they are handled is surprising and, although the natives show considerable skill with them, the requirements are really very few. A waiting herd of several hundred to a thousand seals is often left in charge of one person, perhaps only a ten-year-old boy. If the seals become uneasy in any quarter a slight show of authority causes them to settle back again.

The actual killing is done with long ash clubs

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shaped like long baseball bats and weighing about five pounds each. These are wielded by experienced men hardened to the nature of such work. It is stern business and obviously not a task for the soft-hearted, but, although as described it may appear brutal, no one so regards it who has seen it in operation and who understands the nature of fur-seals. Although the method is primitive, it is exceedingly effective and quite as humane as the best methods used in killing domestic animals. Small groups or "pods" of seals are successively cut off from the main herd and driven up to the clubbers until the whole drive is disposed of. Each seal of proper size is stunned by a sharp blow on the head and while still unconscious a knife is easily thrust to its heart. It is not subjected even to a struggle but appears to die without pain, so the process cannot be regarded as cruel. Unlike many animals, it is wholly indifferent to the smell and sight of blood, since so much is spilled in the daily life of the rookeries, so it is scarcely more terrified during the final stages of the drive than at the beginning. After the seals desired from each small pod have been killed, the remainder, consisting of those that are too large or too small, are driven to sea at the most convenient point.

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They swim off somewhat hurriedly but only to the nearest hauling ground, where they may be found within a few hours peacefully sleeping and ready to be driven again. Since this process has gone on season after season for over a hundred years without any change in the habits of the seals it is quite evident that they are neither sensitive nor intelligent.

Removing the skin is a simple process accomplished by experienced hands in a few minutes. After cooling on the ground for a short time, the skins are taken to the "salthouse," where each is rolled in coarse salt and laid away. A week later they are resalted, spread flat with folded edges, and packed in solid masses between thin layers of salt. In this condition they keep well indefinitely and are thus transferred to ships and sent to market. Formerly the entire catch went to the London market, where it was sold at auction and where most of the dyeing and dressing of the fur was done. Later the dressed fur was imported to the United States. In recent years this has been discontinued and successful sales have been held in St. Louis in the United States with various beneficial results, the most notable being the fostering of the dyeing industry in this country.

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SEALING PROBLEMS

The killing of seals on land as above described was practiced extensively for a number of years and of itself caused no diminution in the breeding strength of the herd. When the United States purchased Alaska in 1867, the herd was very large, probably numbering not less than 2,000,000 animals, and for some twenty years thereafter 100,000 young male seals were taken annually. These were easily obtained and without apparent effect on the number of young born annually; but between 1885 and 1890 the size of the herd declined rapidly from another cause. This was the killing of seals on the high seas, the so-called pelagic sealing. Operating from schooners with small boats and killing the seals with shotguns loaded with buckshot, the pelagic sealers were reckless and irresponsible. Many of the seals were only wounded and escaped to die lingering deaths, while others sank before they could be retrieved. Moreover, a large percentage of those killed were pregnant females which left nursing pups to starve on land, so two and even three generations were snuffed out at once.

Obviously, it was one thing to kill surplus males on land under definite regulations, but quite another matter to take males, females and young

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indiscriminately and without stint at sea. It clearly threatened the commercial ruin if not the absolute extinction of the seal herd besides grossly violating the principles of humanity. But pelagic sealing had become a vested interest and those pursuing it were extremely tenacious of every construction of law that would extend the time in which they could slaughter like wild Indians. They operated principally outside the three-mile limit in international waters and it was evident that nothing short of an international agreement would check them. They were making large profits, so they and their agents and even their governments resisted all efforts to curb their activities.

For more than twenty years, a fight to abolish pelagic sealing went on and finally in 1911, to the great satisfaction of all honest conservationists, a treaty was negotiated which put a stop to it. The contracting parties were the United States, Great Britain, Japan and Russia and the essential idea of the agreement was the exchange of rights on the sea for a share in operations to be conducted on land. The United States and Russia promised to pay Canada and Japan each year 30 per cent of their land catch, 15 per cent to each country. Japan also agreed to pay 30 per cent, divided between three nations instead of two and consisting

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of 10 per cent each to the United States, Great Britain and Russia.

When this treaty was actually signed, it was felt that a great advance had been made toward the preservation of the seals and efficient management of an important resource. But the ink was scarcely dry when politics and private interests again took a hand, agitation continued, and the following year, in 1912, the Congress of the United States, in passing a law to give effect to the treaty, prescribed such regulations that it was freely predicted that instead of furthering the objects of the treaty they might lead to its abrogation and consequently a return to pelagic sealing. This law of 1912 prohibited all killing of seals on land for five years (except a limited number to furnish food for the natives of the islands) and further provided for relatively limited killings for the ten years following, thus prescribing just what should be done for fifteen years, the full life of the treaty. Such a law was justified only on the assumption that the seal herd needed absolute protection and would continue to need it for this whole period. This need was denied by an overwhelming preponderance of American experts. In fact, only one man who had ever seen the seal herd advocated the law, and this man had been repeatedly discredited. Never-

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theless, peculiar conditions favored action of Congress upon bad advice and the law was passed and became effective August 24, 1912. During the discussion of the law prior to and just after its passage, many phases of the sealing question were brought out, much that was irrelevant and only connected with past issues was injected into the situation, an ill-considered congressional investigation took place, charges of mismanagement in the past were preferred, and in general the whole subject was thrown into confusion.

By a combination of what seemed malicious intent and dangerous innocence, a law was thus enacted which purported to be a conservation measure but which in reality threatened the integrity of the treaty which had been won after such a long struggle and which was all that prevented a return to the destructive practice of pelagic sealing. The United States had promised other nations that unless the seal herd vitally needed protection, she would kill surplus seals and divide profits with them. By stopping pelagic sealing, the other nations had kept their treaty promises and naturally were somewhat dismayed at the course of the United States in prohibiting all land killing, for if no seals were to be killed there would be no profits to divide and the expected and promised

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reimbursements for the payments they had made to retire their sealing fleets would not be forthcoming within a reasonable time. However, the foreign governments made no formal protests, although it was well known that they were dissatisfied. The injustice and folly of the law's provisions were freely voiced by various American experts, even extending to some of the officials charged with the duty of enforcing them. The same malicious and unscrupulous methods which had been employed in securing the passage of the law were then directed at these officials, with the result that at least one highly efficient and thoroughly honest public servant was dismissed for no higher crime than doing his plain duty, as was abundantly evident at the time and is still more so after the passage of a few years.

In the spring of 1914, matters reached such a condition that the Secretary of Commerce, upon the suggestion of the Commissioner of Fisheries, ordered a fresh, thoroughgoing study of the whole question by an impartial body of investigators which, as finally organized, included three Americans, two Canadians and one Japanese. These investigators spent the season of 1914 on the Pribilofs and the following January submitted an exhaustive report which was published in June,

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1915.* The foreign representatives made separate reports to their own governments concurring with the findings of the Americans. These findings were substantially that the seal herd was in promising condition, that a large number of young males might be killed with safety, and that the law of 1912 was no longer necessary, in fact that it was highly undesirable. Therefore, the report urged immediate action looking to the repeal or amendment of the law, but Congress adjourned on March 4 and it was only with considerable difficulty that authority was obtained at the eleventh hour to have the report published. No action was taken in 1915 and none has been taken since.

By great good fortune, however, we have been spared the dire results which were predicted and which might well have followed from the continuance of the law's restrictions. There is little doubt that the governments of Canada and Japan regarded this law as working an injustice to them and they were preparing to enter vigorous protests in which they might have placed us in the difficult position of having failed to act on the recommendations of our own experts. Thus the whole question might have been brought before Congress again and exposed us to the danger of

* See footnote, p. 75.

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abrogation of the treaty and a disastrous return to pelagic sealing. But the exigencies of the World War prevented any reopening of minor international matters and fur-seals received scarcely a thought from the lawmakers. Hence, through no effort on our part, this danger has been passed.

Meanwhile the seal herd has been growing steadily and, notwithstanding the relatively limited funds supplied, many improvements in its administration have been effected under the able direction of the Commissioner of Fisheries. In due time, the large surplus of the so-called idle bulls appeared, substantially as predicted. Under the law this could not be prevented and it was of course assumed that the government was suffering a considerable loss through failure to kill these superfluous animals in their third and fourth years when their skins were supposed to be most valuable. However, it was noted that the law included no prohibition of the killing of these old males and accordingly a certain number were taken and their skins placed on the market, with the surprising result that they commanded a much higher price than the three- and four-year-olds which previously had been considered superior to them. This placed the whole matter in a new light. It was evident at once that the obnoxious law of 1912 need cause

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no further money loss and that for practical purposes it would become a dead letter. In 1917, its total prohibition of killing expired and its only important remaining mandate was for the reservation of not less than 5,000 three-year-old males for breeding purposes in each year up to and including 1926. Nothing was specified as to the preservation of these animals if, after reaching breeding age, they were found to be unnecessary. Hence the regulation of the relative numbers of the different classes of seals became to a large extent discretionary with the officers best qualified to act, which was as it should be. If the number of idle bulls becomes excessive, they may be killed and their skins sold for a high price. The ill-conceived law is still on the books and, although its effect on the seals has been as anticipated, this will not react to our disadvantage as was expected.

The outlook for the future of the seal herd, therefore, is brighter than for many years. In 1918, marketable skins to the number of 34,890 were taken, having a value approximating a million dollars and in 1919, 1920, 1921 and 1922 an average of about 25,000 skins per annum was taken. At a single sale in St. Louis on February 2, 1920, the gross receipts for 9,100 skins were

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\$1,282,905 or an average price of \$140.97 per skin.

Continued study of the herd, especially by Dr. G. Dallas Hanna, has brought further data of great practical value which will ensure more and more efficient administration of the great property and a steady growth to a maximum which scarcely can be predicted. As a result of observations by Dr. Hanna and others, it has been learned that the rate of increase will not be so great as formerly expected unless special measures are taken to reduce the mortality of young seals, especially females, while at sea. In ten years, more than half a million seals under four years of age have disappeared at sea, and suspicion points very strongly to the killer whale as the principal agent of this enormous destruction. It has been learned also that the breeding life of the males is somewhat less than supposed, for although individual bulls may reach the age of fourteen or fifteen years, the average is not so great.

Each year since 1911 a careful census of the herd has been made until there are continuous statistics for eleven years, from 1912 to 1922, inclusive, showing the rate of increase of the whole herd and the relative strengths of the different classes of seals. These statistics are invaluable and

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great credit is due those responsible for them, especially George A. Clark, whose branding experiment in 1911 furnished the foundation for so much subsequent work.

A summary of the figures is given in the following table:

*Growth of the American Fur-Seal Herd
from 1912 to 1921*

| <i>Year.</i> | <i>Pups.</i> | <i>Harem Bulls.</i> | <i>Surplus Bulls.</i> | <i>Average Harem.</i> | <i>Estimated Total Herd.</i> |
|-------------------|--------------|-------------------------|---------------------------|---------------------------|----------------------------------|
| 1912 ¹ | 81,984 | 1,358 | 113 | 60.4 | 215,738 |
| 1913 ¹ | 92,269 | 1,403 | 105 | 65.8 | 268,305 |
| 1914 ² | 93,250 | 1,559 | 172 | 59.8 | 294,687 |
| 1915 ³ | 103,527 | 2,151 | 673 | 48.1 | 363,872 |
| 1916 ³ | 116,977 | 3,500 | 2,632 | 33.4 | 417,281 |
| 1917 ³ | 128,024 | 4,850 | 11,682 | 26.4 | 468,682 |
| 1918 ³ | 142,915 | 5,344 | 17,109 | 26.9 | *496,432 |
| 1919 ³ | 157,172 | 5,158 | 9,619 | 30.4 | 524,235 |
| 1920 ³ | 167,527 | 4,066 | 6,115 | 41.2 | 552,718 |
| 1921 ⁴ | 176,655 | 3,909 | 3,301 | 45.1 | 581,453 |
| 1922 ⁴ | 185,914 | 3,562 | 2,346 | 52.1 | 604,962 |

¹ Censuses by George A. Clark.

² Census by international investigators.

³ Censuses by G. Dallas Hanna.

⁴ Censuses by Edward C. Johnston.

* Exclusive of 34,890 seals taken for market in 1918.

Wilfred H. Osgood.

The Big Game of Chihuahua, Mexico

1898-1902

When the big game of Mexico was abundant, unfortunately no individual attempted to arouse local public sentiment to save it. No organization like the Boone and Crockett Club existed in Mexico for the purpose of conserving wild life or anything else. Mexico was not so fortunate in this respect as was the United States.

In the summer of 1875, George Bird Grinnell accompanied Captain William Ludlow's expedition for the purpose of making a reconnaissance of the country between Carroll, Montana, and the Yellowstone National Park. The summer after his return, in June, 1876, Dr. Grinnell sent to Captain Ludlow a report on the zoölogy of the region, which was included in the War Department's official report of the expedition, published the same year.

In a letter transmitting his report Dr. Grinnell seized the opportunity to sound in vigorous language a call of alarm to the government on the

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rapid destruction of the big game. After describing the unrestricted slaughter, he wrote: "It is certain that, unless in some way the destruction of these animals can be checked, the large game still so abundant in some localities will ere long be exterminated." Captain Ludlow in his official report mentioned this slaughter of game and advocated for the purpose of preventing it policing the Park with mounted men. Attention had often before been called to the reckless killing of game in the Park, but Dr. Grinnell did not stop at the mere mention of the facts. After thus obtaining official recognition of them he continued his efforts, both by writing and by his personal influence, to increase the whole public interest in the subject. This finally led to the first practical results toward big-game protection in the West. Dr. Grinnell was not only the active pioneer in big-game conservation, but also his activities toward that end have continued and still continue with undiminished vigor.

More than once the protection of game in National Parks has been threatened by the attempted encroachment of material interests. But the founding of the Boone and Crockett Club provided a sportsmen's organization which took this matter in hand and coördinated all the activities of those who were interested to prevent it. Today no inter-

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ests of any kind would dare openly to push any scheme which might endanger the welfare of the game.

The Boone and Crockett Club directed its activities equally to attempting to save game outside of National Parks, but here the results, though effective, have not been so successful. The Club could successfully influence the Federal Government to preserve game under its jurisdiction, and once the government had been committed to it, police power could be obtained for the purpose. But where states control the game there is less opportunity to influence them to save it, and even though good laws have been enacted, the means of enforcing them are more limited.

Today in the National Parks all the species of western big game have been saved. Some species exist in large numbers; others, though well represented, may not, even under the positive protection given them, survive. Outside of National Parks the numbers of many species of game are so reduced as no longer to be tempting as an object of sport. Some of the older members of this Club, having seen and hunted this game on the plains and in the Rocky Mountains in the days when it was abundant, have left in the series of Boone and Crockett Club books records and observations of

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it. In these books, too, may be found the record of efforts to save it and of the results.

A residence of more than four years, 1898-1902, in the state of Chihuahua, Mexico, gave me the opportunity to hunt and observe the big game at a time when it was very abundant. There were no game laws nor was there any public sentiment tending toward the enactment of them. The game persisted abundant because the Mexicans themselves seldom hunted it. More than any other animal they hunted the deer, but those only casually. The few deer killed by American residents did not affect their numbers; non-residents rarely entered the state for purposes of sport.

About the time I left, however, parts of Chihuahua as hunting grounds had been discovered. Taxidermists in El Paso had, by offers to purchase, induced some Mexicans to hunt and kill mountain sheep. They had killed and sold a small number of them, including ewes and lambs, before I heard of it and induced the governor of the state effectively to prohibit it. Members of the Mormon colony at Colonia Garcia, having become familiar with the game region in the northern Sierra Madre, in the hope of obtaining the financial benefits of guiding, had begun to advertise for American hunting parties. Other Americans familiar

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with the same region made their headquarters in El Paso for the same purpose. But the success of these efforts did not seriously threaten the game. Only a limited area was affected, and probably the breeding stock of the game in it was not diminished. But later, mines were discovered and worked in the game country, both in the desert and in the mountains; lumber industries were started, railroads were extended, and numerous natives obtained the rifles which before they had lacked. These were serious factors. Then followed ten years of revolution, bands of armed men roaming all over the hunting areas killing more game as the numbers of domestic stock decreased; motor cars could be driven in any direction all through the country outside of the mountains. The game was being killed and no efforts were put forth to prevent the destruction. Most of the game is gone, never to return. There are no National Parks or Refuges in which the small existing remnants might be preserved. Unless some record of its former abundance shall be left, the next generation may never know any facts regarding it. It seems worth while, therefore, briefly to state the conditions as I knew them.

The following sketch refers only to the big game in those regions of the state of Chihuahua

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where it was most abundant. Space does not permit any descriptions of game conditions elsewhere, or attempts to define the limits of distribution outside of the state, or detailed discussions of the habits and the hunting of the game animals. The region described, however, was the best field for big-game hunting in all Mexico.

Game was most abundant in the northern half of the state, north of the latitude of the city of Chihuahua, the capital. For an understanding of the areas inhabited by the species of game animals, a brief description of the topography and life zones is necessary. The Sierra Madre Mountains extend north and south through the western limits of the state. These lie within the Transition Zone, the region of pines, the highest section of the state. When approached from the great mesas of the east, these ranges present the appearance of low pine-clad ridges of uniform relief, none of the summits or crests rising above timberline; no striking features of topography are observed. Nevertheless, an impression of a vast mysterious wilderness within is received. Once inside, after reaching the crest of the first ridge, one beholds a bewildering mass of irregular mountain crests, none rising to great elevations, but so broken by canyons, great valleys, deep barrancas, precipitous slopes,

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some falling in cliffs and crags, others covered with rocks and scattered timber, that nature seems to have assembled a series of great mountains together and then to have shaken and shattered them, leaving a region irregularly cleft in all directions. Nowhere on the continent have I seen mountainous regions where the topography is so irregularly broken. Although this region is not well watered like that of the Rockies, limpid brooks fall downward in the canyons and valleys in all directions, gathering in volume as they are joined by others, until finally rivers are formed which flow into the Gulf of California.

The numerous barrancas of great depths, some of them over a hundred miles in length, are the most striking features of this beautiful mountain area. In size, depth and grandeur, several of the larger barrancas almost, perhaps quite, equal the Grand Canyon of the Colorado. After a snow-storm in February one may stand in the morning in deep snow on the rim of a barranca where the cold is severe, and then proceed zigzagging downward until in the afternoon he is in the midst of almost tropical vegetation, including gorgeous flowers, palms and orange trees. North of Colonia Garcia, these mountains are not so broken, more resembling great pine-covered slopes. Still more

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to the north they end, descending to a plain near the United States boundary line.

In the Sierra Madre the annual climate is as delightful as anywhere on the continent, in winter bracing clear days, the nights cold, between twenty and thirty degrees; thoroughly agreeable days in summer, at times somewhat hot in the sun, nights always cool, sometimes cold. Rain seldom falls in winter, though occasionally a snowstorm descends, all the snow quickly melting after it ceases to fall. The rainy season is in summer from June to September, but rains are not frequent unless the season is exceptional, an occasion which may not occur during several years. While traveling during all seasons in these mountains or through the rest of the state I have never even brought a tent.

Bordering these mountains on the east lies the juniper-pinyon-oak belt of the Upper Sonoran Zone, narrow north of Colonia Garcia, but irregularly wide, from forty to seventy-five miles, to the south. The whole region included in it is mountainous, the mountains distributed irregularly around beautiful mesas, some of them of large area. This is a zone of great stock ranges set in magnificent scenery and includes the Bavicora ranches belonging to the Hearst estate. Some descriptions of them and the surrounding country may be read

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in Frederic Remington's delightful book, *Pony Tracks*. Adjoining them to the north is the great San Miguel ranch, once the property of Don Luis Terrazas, which extended to the ranches owned by Lord Beresford. All these lie along the base of those areas of the main Sierra Madre in which bears, whitetail deer and cougars were more abundant than in any other sections of the state. Cactus is seldom found in this belt.

The whole region east of this belt as far as the Mexican Central Railroad, which runs south through the center of the state, lies in the lower levels of the Upper Sonoran Zone and merges into the Lower Sonoran Zone east of the railroad, the greater part of which is a vast desert covered by yuccas, cactus and mesquite trees. The two zones overlap, and in places extend on both sides of the railroad. In this region flowing streams are few, and widely separated tinajas in or near the mountains provide most of the water found in the great desert east of the railroad. Here there are a few small grassy areas suitable for grazing a few head of cattle, but the greater part of it is so arid that stock seldom venture far inside of it. Groups of bare, rugged mountains rising directly from the more level floor of the desert are scattered all over it.

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The small whitetail deer, *Odocoileus couesi* (Coues and Yarrow), seldom weighing when dressed over a hundred pounds, was found in suitable localities throughout the state. In the desert region its habitat was confined mainly to foothills, ridges, mountain slopes and brushy canyons. It was more abundant in the pinyon-juniper belt, but the northern Sierra Madre contained greater numbers than any other section. Here it was not uncommon to see from twenty to forty or more during a day's ride. Often, however, they were not found so easily, and long hard riding or tramping was necessary to secure one. Well within the mountains they were unusually tame and unsuspicious and could easily be approached against the wind. Often I have ridden close to a small herd which stood unalarmed and watched me while without dismounting I shot one of them.

The best time to hunt them is from late December through February, when their horns are free from velvet. The bucks rut in January. It was fascinating to ride up on the ridges and follow the long level areas along their crests, through the open woods of tall, stately pines. One rides slowly and quietly over the surface cushioned with pine needles, carefully peering in all directions, eager and expectant to see the small lithe forms of deer

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which blend so well with the background. The sky above is nearly always clear, enough rays of the sun filter through the pine branches to keep the atmosphere balmy and delightful, all nature is in a state to exhilarate the hunter and maintain his joy.

In those days, one could not ride far without seeing flocks of wild turkeys, sometimes feeding without suspicion, more often scattering and running in fright, their keen senses having detected danger long before the hunter had noticed them. Frequently the deer hunt was interrupted to try to shoot one of these noble birds and enjoy a very interesting diversion, which if successful would provide a royal feast for an appetite sharpened by the bracing mountain air. Buried in the ground, in a rock-lined hole filled with different barks, pine needles and a variety of leaves and herbs, for the purpose of imparting a composite flavor to the flesh during the baking, the wild turkey takes on a taste so delicious that opportunities to enjoy it were not often neglected.

Frequently were seen giant imperial woodpeckers, the largest of the family in the world, ever active, their trumpet calls incessantly sounding, running up the pines or flying from one to another. When in the woods who, when he sees

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a woodpecker, does not pause to observe it with peculiar interest? The sight of the large pileated woodpecker in our northern forests is even a cause for some excitement. But imagine seeing from time to time all through the day woodpeckers twenty-two inches in length, with glossy blue-black bodies relieved by the white lower halves of the wings, and the long recurved red or black crests of males or females! The vision is continually enchanted by the beautiful male Mexican trogons, gorgeous with their metallic green backs and chests and geranium-red under parts; stealthy, mysterious birds, sitting on pine branches or feeding on berries among the shrubbery of the slopes; occasionally a great flock, sometimes hundreds, of thick-billed parrots chattering and scolding among the pine tops break the silence of the woods; the fine crested jay is ever present among the pines, its bold familiarity seeming to welcome the intruder to its abode; and numerous other less conspicuous birds hold the continued interest of the hunter and increase the pleasure of the hunt.

A variety of mammalian life is not so evident. The cougar and the bobcat keep themselves out of sight; bears do not stray far from their hibernating dens; the coyote is occasionally seen skulking through the woods; very rarely a glimpse of the

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timber wolf is obtained. But the fine Abert squirrel, with its long, striking ear tufts and plume-like tail appearing white over its contrasting colors of reddish, black and gray, is one of the most interesting creatures of this woods. Except during the rare days of storm or snow, these squirrels are at hand to bring cheer everywhere among the pines. Running about on the ground, in the pine trees, often feeding at the very ends of the swaying branches, they are tame and social, quite indifferent to human approach. Never lacking their companionship the hunter enjoys watching them between periods of careful scrutiny to see the objects of his main quest—deer.

He rides along the top of a ridge, diagonally crossing from one side to the other, pausing long enough thoroughly to inspect the slopes below. Often, for the purpose of gaining another ridge, he must dismount and lead his horse down and up the steep sides of a canyon. The deer were likely to be seen anywhere, at any time, either feeding or lying down. Should the experienced hunter see one and avoid being scented, he could usually approach within shot. If he had been successful in killing it he would gralloch it, lash it behind his saddle and, if not too far away, ride back to camp, eager to see the rejoicing of the

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Mexicans as soon as they knew that their constant craving for meat could be gratified.

I frequently hunted deer along the Sierra Madre for a distance of a hundred and fifty miles south of the latitude of Chihuahua City. In this section of the mountains they were very plentiful, but not nearly so abundant as in the north. This was the region occupied by the interesting Tarahumara Indians, who at that time did not possess rifles. Their crude methods of hunting did not affect the numbers of deer. During the winter of 1921 I traveled two hundred miles south through this part of the mountains, not specially hunting, yet always looking for and especially inquiring about deer. They were exceedingly scarce, reduced to very low numbers. After several inches of snow had fallen in the heart of the ranges where deer had formerly been abundant, I hunted for them one whole day, tramping up and down the ridges, without seeing more deer signs than a single track. The Indians, having possessed rifles for several years, have almost exterminated the deer. I was told that in the Sierra Madre to the north where deer were formerly so abundant their numbers had been greatly reduced, their range was restricted, and that in only a few limited sections far within the mountains they were still fairly plentiful. Else-

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where in the state their numbers are very low; in some desert sections they are not to be found at all.

The mule deer *Odocoileus hemionus canus* (Merriam), a subspecies of that in the western United States, differing from it by having a paler color and lighter antlers, was with few exceptions confined to the brush-covered regions of the Upper and Lower Sonoran zones, the chaparral in the desert. Strange to say, it was most abundant among the mesquite trees of the wide belt of sand dunes extending east and west for forty or fifty miles, thirty or forty miles south of El Paso. In the desert east of the Mexican Central Railroad it ranged everywhere within the state. West of the railroad, in the country south of the sand dunes where the stock ranches are continuous, this deer had been either almost exterminated or driven over to the sparsely settled desert of the east. West of the railroad, south of the sand dunes, I found it in only two sections, confined in each to the pinyon-juniper belt; there were a few in a small section bordering the Sierra Madre at the north end of the Bavicora ranches, and a larger number among the ridges of pinyon and oak forty miles west of Laguna. While hunting in and along the east base of the Sierra Madre near the United States boundary line in 1899, Dr. E. W. Nelson

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found a good number of these deer and obtained the types of the subspecies.

Colonel Roosevelt and others have laid emphasis on the belts of territory inhabited by deer in the western plains country and in the Rockies, designating the flat thicketed areas as the habitat of whitetail deer, the rolling country above, that of the mule deer, bordering the still higher areas where bighorns find their home. In the deserts of Mexico, however, these zones of habitat are reversed, the mule deer roaming through the chaparral of the flat country, wandering only occasionally to the foothills, the whitetails living almost exclusively on the ridges and mountains even in areas overlapping some of the higher haunts of mountain sheep.

Because the mule deer remained in the flat country they were more frequently hunted by the Mexicans, who preferred the easier method of hunting on horseback and following their tracks. Their habits in general were the same as those of mule deer in the United States, differing only in the necessary adaptations to life in the waterless desert. They fed morning and evening on a variety of desert vegetation, resting during the middle hours of the day wherever they happened to be feeding at the time. Sometimes, when feeding near

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foothills, they ascended short distances to lie down. They seldom ventured near the small ranches scattered through parts of the desert. The hunter's best chance to find them was in areas where the chaparral was large and dense.

Although I often hunted them on horseback, riding long distances either to find their fresh tracks or while following them, yet I preferred to hunt them afoot, for the reason that in this manner of hunting they were less likely to detect me and the chances of approaching them were better. An experienced hunter could at any time go into the areas where they were known to range and enjoy excellent sport.

My investigations as to the present status of these deer, made in Chihuahua in 1921, revealed the fact that not only has their range been greatly restricted, but also that their numbers have been so reduced that only occasionally is it possible successfully to hunt for them. They have become scarce, not being found at all in numerous areas where formerly they were abundant. Railroads, mines, increased population of Americans who methodically hunt, revolution, motor cars and the advance of material interests, will soon reduce the number of these deer to a point where the scattered remnants will be exterminated.

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The antelope, *Antilocapra americana mexicana* (Merriam), formerly roamed all over the deserts and mesas of the Lower and Upper Sonoran zones. As compared with its congener in the United States, it is paler and has other slight color and skull differences. When I hunted them at the time of my residence in Chihuahua, none were found in the deserts west of the Mexican Central Railroad, but several bands, some of fair size, still existed on the beautiful mountain-girdled mesas of the pinyon-juniper belt bordering the Sierra Madre, and also well to the eastward in the same belt. In the extreme north quite a number of them ranged out on the grassy plain extending toward the desert. All these mesas were stocked up to their limits with cattle, sheep and horses, and the antelope shared the ranges with the stock.

Hunting them was prohibited on ranches owned by Americans and by Englishmen, yet now and then a guest was permitted to shoot one, a privilege which on several occasions I enjoyed. There were probably a thousand or more west of the railroad. Mexicans seldom hunted them for the reason that not many of the cowboys possessed rifles, and those who did preferred to hunt deer which were so much easier to stalk and kill. Shepherds while attending the sheep occasionally killed an ante-

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lope, but only incidentally when some of them came near the flocks. Now and then on the ranches an individual could be found who was fond of hunting the bucks during the rut. For the purpose of more easily approaching them, they wore a disguise consisting of the dried head, skin and horns of a male, and also a white cotton shirt falling to the ground, crudely painted in imitation of an antelope's color patterns. I have never observed this method of hunting, but the old Mexican rancheros often told me that it was a survival of the practice which had been successful years before, when antelope were very abundant. At the time I was there, however, they asserted that the method, when practiced by Mexican hunters, seldom met with much success.

The antelope in this belt diminished in numbers toward the south, the last band in that direction containing only a dozen or fifteen, which occupied a very small range of only a couple of hundred square miles or less on the Bustillos ranch, sixty kilometers west of Chihuahua. This small band lived exclusively in the timber of junipers, oaks and pinyons. I visited this ranch very frequently during five years and often saw these antelope. Formerly the band, then very large, had ranged all over the wide expanse of surrounding mesas, but the

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vaqueros had hunted, chased and shot them until the few that remained sought better protection by adapting their habits exclusively to the shelter of the woods. This band has now been exterminated and the number of antelope in this whole belt so reduced that only a few scattered remnants survive.

East of the railroad, antelope in small bands ranged all through that section of the state. I could never reach any satisfactory estimate of their numbers, but there must have been several thousand. Feeding among yuccas, cactus and mesquite trees, they were difficult to find, but when sighted were comparatively easy to stalk. Yet the nature of their habitat had compelled them to become much more watchful than were the antelope of the clear mesas to the west. Throughout these deserts water is very scarce, most of it in the regions frequented by antelope being in the tinajas in the mountains. At or near these tinajas I never saw or heard of antelope or their tracks. They did not go to other water supplies, at least I could never learn that they did, and I believe that between rains they did not drink water at all, but obtained what they needed to sustain life from the vegetation. I believe this is also true, for the most part, of desert deer and sheep. I have learned

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many facts since that time which confirm the conclusions I then reached.

But few cattle ranged in many parts of the desert, in many large areas none at all, and therefore Mexicans did not frequently ride through it. When they did, if they hunted, they always looked for deer, only killing an antelope when accidental conditions made it easy to do so. These desert antelope, usually more or less concealed by the vegetation, seemed strangely elusive; there was never any certainty of finding them. Through areas where they were very abundant, their fresh tracks visible everywhere on the surface, one might often ride for hours without sighting one, until when least expected they might suddenly appear on all sides. But if the hunter failed to get one and they became frightened, immediately they began running and the chaparral seemed quickly to swallow them from sight, a second glimpse of one being seldom obtained.

The bands did not often exceed forty, more often from five to fifteen. They wandered restlessly over the desert, driven to roam widely by the conditions of scanty food supply. I can recall many delightful trips, riding for days over wide areas in search of these interesting animals, not all successful in finding and killing game, yet not

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one of them disappointing to him who had learned to love the desert. I used to believe that the character of the parched waterless country which sheltered these antelope would preserve them. But the causes already mentioned have reduced them to very small numbers. Small bands may yet survive for a long time, but I have been reliably informed that it is now so difficult to find them that it is not worth while to make a hunt for them. Nobody who loves wild life would now care to kill one. A hunter with the right feeling can never enjoy an antelope hunt for sport again.

The grizzly bear, *Ursus nelsoni* (Merriam), was most abundant in the northern Sierra Madre. At that time some of these bears might occasionally wander outside of the mountains in the pinyon-juniper belt, but their haunts were within the main sierra. There was a progressive scarcity of bears toward the south, none at all being found south of the latitude of Chihuahua, except in a very small section including some outlying ranges south of Carachic. Every spring and fall I hunted them where they were most abundant, in the region bordering the Bavicora ranches and northward. These bears are smaller than those of the Rockies; in fact, they are smallest of all the grizzlies. Their color is variable, some are pale buffy,

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others grade through the darker shades, including the silver-tip appearance, to a dark, almost uniform brown. Observed from a distance when the sun shines on them the buffy-colored bears appear white. This is the reason why the Mexicans believe that two species of grizzly bears occur in the mountains, giving the name of *oso blanco* to the light-colored ones, and *oso plateado* to the others. Also they as often call either a dark grizzly or a cinnamon-colored black bear *oso alesan*.

Certain habits of these grizzlies gave opportunities for fascinating sport. From November to April they hibernated far within the ranges, at least they did not leave the interior recesses of the mountains until near the first of May. Immediately after leaving their hibernating quarters they traveled over to the canyons of the slopes bordering the great cattle ranches and began to feed on the carcasses of dead cattle. Every spring this region suffered from a severe and prolonged drought. All vegetation was parched and the temporary water supplies had evaporated. All cattle became very weak and those having wandered far from permanent water supplies were not able to travel back to them. Instead, they attempted to push up near the heads of the canyons, where more or less water could be obtained. But before reach-

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ing the water, or soon after, many of these weakened cattle died. Their carcasses were in nearly every canyon and the bears had formed a regular habit of feeding on them. The hunter who understood their habits and the conditions walked silently up or down a canyon, either finding bear tracks and knowing that a bear was feeding in it, or, if no tracks were observed, he would cross over a divide and enter the next canyon leading to the plain. When undisturbed the bears fed early in the morning or in the late afternoon and the evening. If they had detected the presence of humans, they fed exclusively during the middle hours of the night. After feeding, they either slept concealed somewhere near the carcass, or they might take a walk for some distance down the canyon and then return for a rest high on the crest of a ridge. Sometimes they partly buried the carcass, sometimes they merely fed on it where it lay.

Success in hunting these bears did not consist in the tamer sport of sitting concealed near a carcass and, with the hope of shooting it, waiting for a bear to come to feed. It required hard work, experience and extreme caution. They were extremely timid, quickly fleeing if they suspected human presence. In fact, although I have shot, killing directly or wounding, many of these bears

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at or approaching their food, and on other occasions, not once have I ever seen one display any trait except one of extreme fright. On receiving a wound that did not disable them they always attempted to run away. Twice I have approached badly wounded mature male bears, but in each case they only tried to crawl away. In Mexico, as in every other region, most natives dread an encounter with a grizzly, and one may hear the usual reports of its aggressiveness and ferocity. My efforts were unceasing to find an authenticated case of any attack by a grizzly, of any kind, but I never succeeded in doing so. Johnny Bell, who had managed the Bavicora ranches for many years, had had long experience with these bears under all conditions. During the years I lived in Mexico we were sympathetic friends and made many long trips together. An old-time Texan, he was not averse to relating exciting bear stories to inexperienced persons. Some of his tales related to receptive ears did not give an impression that the grizzlies of Mexico were timid or pacific. To me, however, he asserted that he had never observed any aggressiveness on the part of these bears even when they had been wounded, and also that he regarded them as the most timid animals in the woods. Dr. E. W. Nelson hunted these bears in

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the vicinity of Colonia Garcia in 1899 and secured five of them. He found them just as timid as I did. But he also obtained a reliable report of one of them having killed a Mormon, who had wounded the bear and followed it in thick brush, almost stepping on it, when the bear knocked him down and bit him, driving its teeth through his skull.

There was a charm in the hunting of this bear in the spring which was unique. About the first of May I used to camp in a clump of pines outlying on the plain. Two Mexican vaqueros, employed for general assistance, were my companions, or really good, well-tested friends. They always maintained the most friendly cheerfulness and genuine interest in the success of my trips. No amount of work ever diminished their happy spirits; more than anything else they enjoyed being out in camp, and all the vicissitudes of life in the wilderness. They never carried rifles or joined me in the actual hunting. One or the other would watch the horses all night and long before daylight he would arouse me from a healthy and profound sleep in the open air under the bright stars. I would then quickly seat myself before a fire radiating its heat through the clear sharp air and have breakfast and coffee already prepared by my faith-

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ful friends. After their cheerful words wishing me good luck, I started walking rapidly across the plain, headed for the entrance to a canyon, which was reached before daylight. During the cooler hours of the morning the air always moved down these canyons; but after being well heated by the sun, its direction was reversed and it continued to move up all the afternoon. Should the day threaten to become very windy, either I did not start or, if a strong wind suddenly began to blow, immediately ceased hunting and returned. Except when the conditions were favorable it was unwise to leave tracks in or disturb the hunting ground.

When objects could be clearly seen, I started slowly to walk up the canyon as noiselessly as possible, carefully watching ahead, continually pausing to look and listen. Most of these canyons, grading gently upward, are not rough; their bottoms, extending on both sides of a creek, are fairly level, and filled with a magnificent dense growth of tall pines, scattered madroño trees and patches of brush. Water seldom runs in the bed of the creek except near the head of the canyon. The pine-covered slopes on both sides incline upward, gradually in some places, in others abruptly; but in a few places, for short distances only, the sides are walled in between high precipices.

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It was not long before the sun came up and warmed the chill air, causing the spring love songs of the birds to sound on all sides. One of the most fascinating features of this section of the Sierra Madre is the wealth and variety of bird life in the early spring. The birds mass in the canyons and on the bordering slopes. Immediately trogons began calling from the trees, sweet warbler songs came from all directions, sparrows and solitaires, robins and other birds, all joined in a chorus and added joy to the senses of the hunter. But my memory recalls most vividly the thousands of humming birds of several species, some of them brilliantly colored, filling the air, darting about everywhere, and the unceasing hum of their rapid wing beats and the thin chatter of their voices while in flight. Abert squirrels constantly scampered about the ground, turkeys were frequently seen; all nature seemed harmoniously to greet me while stealthily threading through the noble pines, my senses alert to every sound and sight around me.

I was well up the canyon, the sun was mounting higher, yet no signs of bears had been observed. But I kept on and on, never relaxing my caution, until finally several fresh bear tracks were seen in some exposed soil. An inspection of them showed

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that a bear had come down through the canyon to this point a couple of times and had returned almost in the same tracks. The head of the canyon was only a mile beyond and somewhere ahead a bear was regularly feeding on a carcass. Was I too late? Had the bear gone to rest? I did not believe it, because the canyon had been easy to ascend, good progress had been made, the direction of a slight breeze was favorable, and the hour was not too late. The cattle tracks indicated more than one carcass, one of which might be found anywhere ahead. Caution was redoubled, the advance was directed toward any spot or elevation where a long sight ahead might be obtained. The cocked rifle was held ready for a possible quick shot. Shortly ravens, perhaps two or three, rose from the ground not far ahead. Short advances were maneuvered until a carcass was seen. Then a silent watch, long enough to be satisfied that no bear was near it. There were no signs indicating that one had been near it and advancing up the canyon, until I noticed what seemed to be a sudden motion of something behind a patch of brush, I paused and watched, but detected no further movement. But not believing I had been deceived, step by step I moved to the right, for the purpose of reaching a slight eleva-

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tion behind a tree where I could see beyond the brush. Finally I crept to the point and slowly rose. Near the brush, at a distance from me of a hundred yards, more or less, was a fine grizzly standing with its head to the ground as if smelling the surface. A few yards away lay the carcass of a cow.

At the crack of the rifle, the bear fell, struggled a moment and died. It was a fine mature male, in beautiful full pelage of pale buffy color. Most of the hind quarters and part of one side of the cow's carcass had been eaten. The hour was nine. After a short rest I took the skin off, threw it over my shoulders and by noon the Mexicans, while cooking a good meal, were rejoicing at my success.

Later that day the camp was moved a couple of miles farther along the range to a point convenient for hunting another canyon. I did not find a bear in it the following morning, but crossed over a divide and followed down another canyon, where in the afternoon I killed a female bear as she was in the act of feeding. Three days later in another canyon, a third bear was killed, a dark male.

At times, however, bears were not found so quickly, and several canyons were hunted from different camps before success could be attained. While shooting bears on these spring hunts I had

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a variety of interesting experiences with them, yet the description given is typical of the methods of hunting at that season.

In the latter part of May or early June the bears ceased feeding on carcasses and began widely to roam through the mountains, having some preference for the great canyons. During the summer months they could not often be methodically hunted. I traveled much through these mountains in summer and in some sections usually saw a grizzly or two, but never attempted to shoot one after the month of May. I never found an authenticated case or reliable report of one of these bears killing cattle. In fact, the Mexicans themselves, who continually ranged through the bear country looking for stock, maintained that grizzlies never molested live cattle, and that the latter did not fear them. Johnny Bell also held the same decided opinions.

By fall the bears were very fat, and by October all had worked well back within the mountains, where they always made their winter dens. Here are wide valleys lying between the precipitous slopes of high mountains on either side. In these valleys are long ridges covered with acorn-bearing oaks. Here the grizzlies more or less assembled for two or three weeks before hibernating, and fed on the nuts. Every fall I made a special trip

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to hunt them, reaching the valley ridges after a hunt for deer and turkeys. Afoot and alone I tramped over the ridges and always saw several bears, some of which I never failed to secure. Because the bears while feeding kept actively moving over wide areas, hard, vigorous hunting was necessary to get a good shot at one, and often I was obliged to stalk for hours before doing it. But it was fine sport in a magnificent country. Although I frequently traveled through the mountains in winter, I never saw even signs of bears during the months of hibernation. But Mexicans who had spent most of their lives in or near the mountains, and also Johnny Bell, told me that during warmer days in winter bears often wandered about for short distances from their dens. I have no doubt it is true. Every year, including spring and fall hunts, I shot five or six grizzlies.

Now that a railroad follows the edge of the mountains and mines and lumber mills have invaded this habitat of the bears, they are greatly reduced in numbers, their range is restricted to smaller areas far within the sierra; the sport which I enjoyed is gone forever. They are following their relatives in the United States along the path to extinction. This will happen before a long period of time. Then, although the glory of the

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scenery in the Sierra Madre will remain, complete enjoyment of the spirit of these mountains will have vanished. The deep, mysterious emotions aroused by the sight of, or by a sense of the presence of, the grizzly bear in the wilderness will be lacking.

Black bears, *Ursus americanus amblyceps* (Baird), were fairly common through the Sierra Madres, particularly in the north. Among them the "cinnamon" phase of color was not uncommon. They are the same subspecies as that which occurs in western Texas and New Mexico. They ranged far to the south, but there they were not so common. I never had the good luck to see one, but Dr. L. C. Sanford, who accompanied me on a trip for bears in the spring of 1901, killed a fine brownish male feeding at a carcass. While in Chihuahua in 1921 I could get no information as to the present abundance of these bears north of the latitude of Chihuahua. But on a trip south through the mountains where these bears formerly were not uncommon, none now exist for a distance of two hundred miles at least. The younger Tarahumara Indians and Mexicans living in these areas do not even know what a bear is. I could find no reason for their disappearance.

There were no black bears in the deserts of Chi-

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huahua except in one or two deep canyons in the mountains in the extreme southeastern part of the state. I once saw fresh tracks in one, but the vegetation was so dense that I could not find the bear. There were only very few, and they lived exclusively in the canyons. These are a subspecies, *Ursus americanus eremicus* (Merriam), with larger molar teeth than those of *amblyceps*. Dr. E. W. Nelson obtained the type in Sierra Guadalupe in the adjoining state of Coahuila. Once a Mexican brought to my house in Chihuahua a live female cub, captured in one of the canyons I have mentioned. This I sent to the New York Zoölogical Park, where it lived and was exhibited for several years.

Cougars, probably *Felis hipolestes aztecus* (Merriam), were abundant in the Sierra Madres. They were not uncommon in some parts of the desert. I never hunted or saw one. Bobcats were common throughout the state. I saw them on several occasions, but could never obtain a shot at one.

The sport which most appealed to me and in which I most often indulged was hunting mountain sheep, *Ovis mexicanus* (Merriam). They inhabited exclusively the desert mountains. Like all mountain sheep of northern Mexico, they have well-marked

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characters clearly separating them from the typical species, *Ovis canadensis*. Anyone familiar with the skulls of wild sheep can stand at a distance and point out those of mature desert sheep when they have been assembled and mixed with mature skulls of *Ovis canadensis*. Formerly they were found throughout the state on most of the high desert ranges. When I lived in Chihuahua some of the older citizens remembered the time when wild sheep ranged on some of the mountains near the city. I used to admire three or four fine skulls hanging on the walls of the house of an aged ranch owner then living. These sheep had been killed by his vaqueros sometime before 1860, on mountains twenty miles north of Chihuahua.

But when I first went to Mexico only two bands, the members usually separated in small units, of sheep remained on the mountains west of the Mexican Central Railroad. One, of forty or fifty, more or less, occupied exclusively a small group of mountains about twenty miles west of Villa Ahumada, including Banco Lucero, Chilicote and Sierra Grande, all joined together by ridges. The southern summit of Sierra Grande almost overlooks the village of Carrizal, and from the streets the residents frequently saw some of these sheep on the mountain. Another band, equal or less in

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numbers, ranged on the mountains about Lake Santa Maria, including Sierra San Blas and La Nariz. These two bands of sheep were separated by eighteen or twenty miles of sand and flat desert which they never crossed. I heard rumors of a very small band below Deming, New Mexico, south of the international border, but could never verify the fact of their occurrence there.

East of the Mexican Central Railroad, bands of sheep ranged on various groups of mountains to the eastern limits of the state, and south to the Rio Conchos, sixty miles east of Chihuahua. Twice I hunted the desert mountains south of that point to confirm conflicting reports of the occurrence of sheep, but never saw any signs of them. The sheep occurred locally, not being found on many of the mountains lying contiguous to others always occupied by them. They preferred broken mountains having a minimum growth of vegetation. I could never form a satisfactory estimate of the number of sheep in the state, but concluded that they could not have been less than two thousand. During the first four years of my residence I never heard of any American attempting to hunt these sheep, except Dr. E. W. Nelson and E. A. Goldman, who obtained a series of five on the mountains about Lake Santa Maria. A study of these specimens

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resulted in the description of the species. Before my arrival in the state, an Englishman had made a successful trip for them to Banco Lucero. I knew one Mexican, a deer hunter, who sometimes attempted to stalk them, but only when he was near their haunts while hunting deer. Occasionally vaqueros, and possibly other deer hunters, when riding through the desert might see sheep low on the mountain slopes and kill some of them. An astonishing fact is that when I first went to Chihuahua and made enquiries about the occurrence of sheep in the state, I could obtain no information whatever about them. It was only after long and assiduous work and correspondence that I first learned that a few sheep inhabited the Banco Lucero group of mountains. The Mexicans commonly designated the sheep, *Borrego cimarron*, a common name misapplied, since *cimarron* signifies feral. Cultured Mexicans, however, correctly called them *Borrego silvestre*.

Because everywhere the sheep were very wild, experience as well as hard work and climbing ability was required successfully to hunt them. The greater part of the time they remained high on the mountains, descending only occasionally to feed on adjoining ridges. They did not commonly, as do the desert sheep of southern Arizona and

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most of those in Sonora, feed frequently along the foot of the slopes. Their food included a very large variety of desert vegetation, including cactus and its fruit, from which they mostly obtained the water necessary to their existence. Like all other sheep of the southern deserts, including those of Texas and Arizona, grass of any variety formed so small a percentage of their food that in most cases it was eaten only incidentally. I scarcely ever found any grass in their stomachs. They seldom came to drink at the tinajas, and sheep occupied some mountains, which they never left, where there is no water at all.

They begin to rut in October, possibly a little earlier. Their enemies, aside from man, were bobcats, coyotes and in many places cougars. The golden eagle was very abundant, ready to take the new-born lambs in February and March. I do not believe that anywhere in the southern deserts of America wild sheep were ever abundant in comparison with the numbers that were found in the north. The desert environment is too severe, the food supply too limited, to support great numbers. Seasons of great drought result in fatality to sheep as they do to cattle. The ears of all desert sheep are more or less infested with ticks, but it is doubtful whether these have much influence on their

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death rate. In Chihuahua I have never seen a band of more than sixteen sheep assembled. More often, only a few, from three to eight, kept together. Sometimes, not often, one or two mature rams were found with ewes. Very old rams usually kept by themselves. Nearly all desert mountains of Chihuahua are, in one direction or another, near together or connected by ridges, so that in order to cross from range to range, sheep do not have to travel far over the flat country. Therefore, with few exceptions the sheep east of the Mexican Central Railroad were not isolated. Specimens from two or three widely separated mountains are not available for study. West of the railroad the two bands of sheep were isolated from each other and from the rest of the sheep in the state. An intensive study of their skull characters may show some differences.

I was so much impressed by the charm of hunting these sheep that it led to an interest both in hunting and studying the species which still persists, even after indulging in it for many years. A hunt for sheep might also include one for antelope, mule and whitetail deer. The first two could be hunted on adjoining plains without disturbing the sheep ranges. The days, always clear, were beautiful. When I had climbed high above the plains,

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on all sides below, the flat desert, relieved by craggy mountain masses rising from it, extended far away, fading from the vision. As I clambered along the crests looking for rams, the wealth of desert colors filled the soul with joy. Should the hunter be successful, the ram could be dragged or packed down the slope, lodged out of reach of coyotes in a yucca, and later brought to camp on a horse.

During my residence in Chihuahua I hunted on nearly all the sheep mountains of the state. All the events and experiences of each hunt are still vivid in memory. I had for a long time known that a ram with very large horns lived on a great craggy mountain, and two special hunts for him had resulted in nothing more than a glimpse of his head disappearing behind the mountain crest. But just before my final departure from Mexico I could not resist making one more effort to secure him. Fortunately I succeeded, and obtained, so far as I know, the record head of this species. The girth of the horns was sixteen and a half inches, the length thirty-five. I had before killed others with horns from fifteen to fifteen and a half in circumference. I have seen, and also killed, rams with horns well curled in an upward spiral, but these

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were most exceptional, the common type of horns being short.

When in Chihuahua in 1921, I was naturally most interested to ascertain the present numbers and distribution of the sheep. I even made a special trip to Villa Ahumada to see Pedro Sorillo, a Mexican who nearly always had accompanied me on my sheep hunts, and who had since continued to roam through wide areas of the sheep country. The sheep of the Banco Lucero region are extinct, and probably also those of the Lake Santa Maria district. All sheep near their former south limits are gone. Only here and there, far in the desert, a few remnants of the former bands persist. But these must soon be destroyed. Thoughts of my optimistic conviction held throughout the period when I hunted these sheep are not happy ones. I used to believe that the very character of the desert itself, its lack of water in many places where the sheep lived, was a permanent protective environment for them. Few hunters would ever care to convey water at some distance from the tinaja, and then, after sending the horses back, remain alone for a week to hunt, as I used to do. But little did I realize that this same desert possessed one feature which was to become the greatest factor leading to the exter-

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mination of its game—its flat surface. This invited the motor car, which arrived in numbers a few years later, and these conveyed hunters, water, food and equipment, in all directions, to nearly all the sheep mountains.

I have mentioned other factors which assisted the decrease of Chihuahua big game. But when I passed through the game regions on the railroads in 1921 what changes did I see? Formerly the plains were alive with stock. But now all the way through Chihuahua to the Sierra Madres no cattle were in sight, except a few very small herds near village corrals, guarded by two or three mounted Mexicans. Elsewhere a large part of the plains was black and uninviting, seared by fires which had spread widely because there were no vaqueros to extinguish them. Not only that, the stock had been killed or removed, and for years there had been no vaqueros, as formerly, continually poisoning and killing coyotes. These had so increased as to become a serious scourge. The poultry was not safe from them even in the villages or in the heart of the Sierra Madres. I was informed that they had almost exterminated the hares and rabbits. The numbers I saw from the car windows are almost incredible. We can imagine this menace to the remnants of the game.

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Within twenty years these great game fields have become almost barren. Now, when it is too late, a misdirected effort has been made to preserve the sheep and the antelope, forgetful of the mule deer, which need it even more. With highly commendable intentions President Obregon has this winter issued a decree prohibiting the killing of sheep and antelope for ten years. That is all. No funds for wardens, no plan of action, accompanies the decree. No sportsmen who will care for its enforcement are at hand, no local sentiment in behalf of saving game exists. Antelope and sheep are now in regions where few people live, and where laws of any kind, except those against theft or murder, receive no respect. As well might the President of the United States hope to save the game by issuing a decree prohibiting the killing of it in arctic regions and then take no other action in regard to it.

Is there any new lesson to be derived from the destruction of this game? Perhaps not for those who are familiar with the history of game in the United States. Yet it emphasizes one fact not widely recognized. Except for one or two cases of killing sheep, and one of killing deer in the Sierra Madres for the purpose of sending the meat to El Paso, both of which practices were imme-

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diately and effectively prohibited by the governor of the state, no big game, except rarely a single animal or two, has ever been killed in Chihuahua for sale. No meat of big game has ever been regularly sold there; market hunters have been unknown; no animals have been regularly killed to supply railroad, mining or other camps; sportsmen have never killed enough of this game to impair the breeding stock. The game has been destroyed exclusively by the unrestricted local hunters. No local protests of any kind against the destruction were made. The fundamental reasons why this game has been destroyed are that there has been no local sentiment to save it, and no local Mexican sportsmen to arouse such sentiment. Mexican sportsmen, if such had existed, would have been the only class of men that would have formed this local sentiment. Sportsmen have been the only class that have ever effectively aroused it in the United States.

Charles Sheldon.

Saving the Redwoods

The interest of the Boone and Crockett Club in the conservation of American forests is not primarily founded upon the importance of their preservation to regulate the volume of streams and rivers, nor upon the economic necessities of an adequate timber supply. These aspects of forest protection concern the National Bureau of Forestry and similar agencies in the different states.

The Boone and Crockett Club, however, does have the deepest concern over the wasteful destruction of our woods as refuges for our game and as part of our national heritage. The Club recognizes that there is a very large portion of the superficial area of North America which can be devoted profitably only to the maintenance of forests. Mountains, hills and vast areas, where the soil has been denuded or has never had sufficient fertility for crops or grazing, should have been reserved and dedicated to the growth of trees.

In the East, from the Hudson Bay height of land well into the southern states, there are very

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few places, if any, where the virgin forest still persists—that is, areas from which the better trees have not been culled by the axe—or where within the period of white occupancy the ground has not been swept by fire.

Along the seaboard there remain very few groves or even individual trees, still less forests, which were standing in Indian times and the same statement is true of the country just west of the Mississippi. The forest which covered the land like a mantle from the Far North to the Gulf of Mexico, and from tide water on the east to beyond the Mississippi on the west, left few spots where settlements could be made without first destroying the trees. Each early settlement made was called a "clearing," a word in colonial times almost synonymous with "civilization."

Settlers regarded the trees as enemies. The woods or heavy undergrowth gave shelter to their enemies, the Indians, and to the wild beasts that preyed upon their cattle. The duff which everywhere formed the forest floor, before fire had swept it or the forest cover had been broken and the sun's rays admitted, was a sponge which held back the draining of the waters and created widespread swamps. Until the forest covering—at least that of the bottom lands—had been removed, the

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country could not be settled. These bottom lands held many of the finest trees, but they had to go, if the country was to be occupied by white inhabitants. No such necessity, however, justified the loss of the forests on rocky slopes or on barren soil, and here the destruction has been largely by fire and often quite wanton.

The net result of the activities of our ancestors was to leave to us the eastern half of the continent with but a fraction of its poorer forests.

On the Pacific Coast, however, conditions are very different. When we cross the Sierras and the Cascades we enter into a series of forests which are of vast and unbroken extent in the northwestern corner of our country. Many of the trees are of unique genera and species and even those related to eastern species assume a size and vigor quite unknown in the East.

The most interesting and unique of these western trees, standing by themselves in the forest flora of the whole world, are the Sequoias.

This genus was widespread throughout the northern hemisphere during Mesozoic times and seems to have been the characteristic tree of California during the Cretaceous. The antiquity of this group is graphically illustrated by the fact that fossils of Sequoia-like trees are found in the rocks

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which constitute the present Sierras and Coast Ranges. In the base of Mt. Shasta and under its lava flows the ancient rocks are marked by imprints of their leaves and cones. Such antiquity can be measured only by millions of years, and thus the life history of this group of trees extends over a large proportion of the history of vertebrate life on the globe and antedates the earliest form of mammalian life.

The two surviving species of this once widespread Sequoia group are found almost exclusively within the limits of California, although at the northern end of their range they extend a few miles into Oregon.

The two species must not be confused. One, the widely known Big Trees of the Sierras, the *Sequoia gigantea*, is found only on the western slope of the Sierra Nevadas in California at an altitude of from five to eight thousand feet. They seldom constitute a solid stand but are everywhere mixed with other huge trees—sugar pine, yellow pine, white fir and incense cedar. They occur in about thirty-two isolated groves and extend over a northern and southern range of about two hundred and fifty miles. In the northern part of their range, they are much scattered and isolated, and the various groves have long since lost touch with

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each other. In the south, the groves are larger and the trees more numerous, but it is clearly a case of discontinuous distribution and represents a failing and dying race.

The Big Trees all grow in sheltered spots and are protected by surrounding forests. Their survival is dependent on the fact that the slopes of the Sierras are more or less windless. They have suffered throughout the ages from ground fires, but owe their continued existence to their protective bark, which is a foot or two feet in thickness. Traces of fires are found in the interior rings of the trees, but during the last century the burning has unquestionably been much more intense than ever before.

Their reproduction is poor, but the tree itself shows remarkable vitality and an ability to recover from terrible fire wounds, if only a portion of the cambium layer can reach into the ground and obtain the immense quantity of water required for such gigantic trees.

Injury by fire, while it may not kill the tree, checks its growth in proportion to the degree that its contact with the ground is impaired. It is due to the fact that many of the trees have been so badly injured by fire and their water supply so greatly reduced that their tops are dead. When

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contact with the water supply is renewed on a large scale, growth is resumed at the top—usually through a false crown.

Since the Big Trees are without tap roots, they are obliged to stand absolutely straight. It has been estimated that, if these trees could escape upsetting by the wind or undermining by water throughout their age-long existence and could also entirely escape injury by fire, the proportionate growth (calculated from the tapering of the trunk) to their uttermost limits would be over 600 feet. This, however, is mere speculation, as the height of the largest of the existing trees runs from 150 to 280 feet. The taller ones are often found without branches to a height of 175 feet. The diameter runs from 5 to 25 feet at shoulder height above the ground and in the most extensive of these stands—the Giant Forest—there are said to be 5,000 trees with a diameter of ten feet and over.

The largest tree of the Giant Forest is the General Sherman, the height of which is 279 feet 9 inches, and the diameter, 36 feet 5 inches.

The question of the age of individual trees has been the subject of endless discussion. The known age of trees which have been cut, computed from their rings, runs from 1,100 to 3,250 years, but

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there is no doubt that this great age is exceeded in such cases as the General Sherman, the Grizzly Giant and some others, which are not only the oldest, but also the largest, living things on earth.

There is always a factor of uncertainty in an estimate of the age of a given tree where size alone can be considered, because this depends on the rate of growth and supply of water. In exposed positions with poor water and soil, development is greatly retarded and a tree, although relatively small in size, may be very ancient. On the other hand, a favorable location, such as a pocket in the rocks with access to underlying water, might greatly accelerate the growth of a neighboring tree.

There is nothing in the record of the rocks to show that there ever existed on earth any form of life, vegetable or otherwise, which exceeded these Big Trees in bulk, weight and longevity, nor is there any reason to believe there ever was on earth a grove of Redwoods or any other large trees finer than the existing grove at Bull Creek Flat.

The Big Trees of the Sierras are national monuments of the utmost value. Cathedrals can be rebuilt, Old Masters can conceivably be excelled by great artists in the future, a new Praxiteles may give us statuary greater than that of the Greeks,

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but it is beyond the power of man to replace these monuments of a long-vanished past.

Great as has been the destruction of these wonderful trees for their lumber, fortunately most of the groves stand on government-owned land and, for the most part, are now set aside and intelligently protected. Our fellow member, Stephen T. Mather, now the Director of National Park Service, has been untiring in saving these trees and he is spending his time and money in endeavoring to include within National Park boundaries the few outlying groves which remain in private ownership and which may otherwise be destroyed by the axe in the near future.

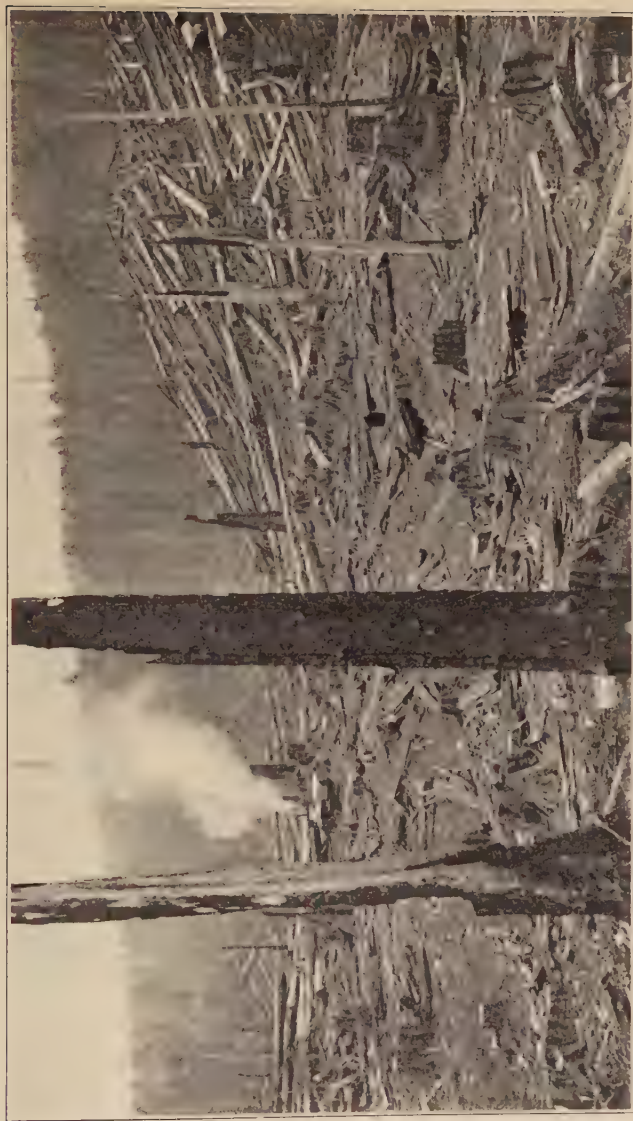
If the Big Tree of the Sierras, the *Sequoia gigantea*, is a superb ruin, a national monument and the oldest living thing on earth, its cousin, the Redwood of the Coast Range of California, is the tallest tree and, in my opinion and that of many others, the most beautiful.

These Redwoods grow not in isolated and dying groups like the Big Trees, but in unbroken stands for hundreds of miles along the coast, although in the southern part of their range the axe has destroyed them over vast areas and the groves south of Humboldt County have become separated.

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The Redwood, *Sequoia sempervirens* (the immortal Sequoia) well deserves its name. It has been burned and hacked and butchered but still persists in putting out new foliage and covering up its scars if given the slightest chance. In many cases where the stump has been cut or burned to a cinder a new ring of vigorous young Redwoods grows from the roots and forms a circle around its base. In this capacity of growing from shoots rather than from seeds and in forming these curious rings which are to be traced in the oldest groves, the Redwoods differ widely from the Big Trees, which rely on seed reproduction only.

Since the white man has undertaken the development of California nearly all of the Redwood forests have been more or less injured by fires which are frequently deliberately started by the lumbermen to clear away the slash. I know of no more wonderful sight than that of a charred trunk throwing out a spur of new growth twenty or thirty feet above the ground or that of a new tree actually standing on top of an ancient bole and sending down its shoots like tentacles into the ground around the mother stump. Other trees stand athwart their fallen ancestors and continue to readjust their root system as the underlying trunk decays. The decay of a Redwood trunk,



ONCE REDWOODS

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however, is extremely slow and its ability to resist rot is one of the unfortunate virtues that has made its lumber so valuable.

In other words, the Redwood forests of California are vigorous and vital and if given half a chance will reoccupy their old ground. We have only to wait, therefore, and protect them for a thousand years or more and we may be able to get back some of the forests that are now being burned and slashed.

If we are not interested in what happens a thousand years hence we must take immediate action to save some of the more beautiful groves for the age we live in. Vigorous as these trees are, if the forest is burned several times in succession, as has often happened, the Redwood's capacity for shoot reproduction is lost and the tree apparently gets tired of its unsympathetic surroundings and dies.

The age of the Redwood is about one-half that of the Big Tree of the Sierras. The ring growths show that the life of a mature Redwood runs from 500 to 1,300 years. The diameter of the larger trees is 16 feet and over and the height runs from 100 to 340 feet, thus greatly excelling that of the Big Trees. We have every reason to believe that this height is surpassed by certain individual trees and that the ultimate height of 350 feet or more

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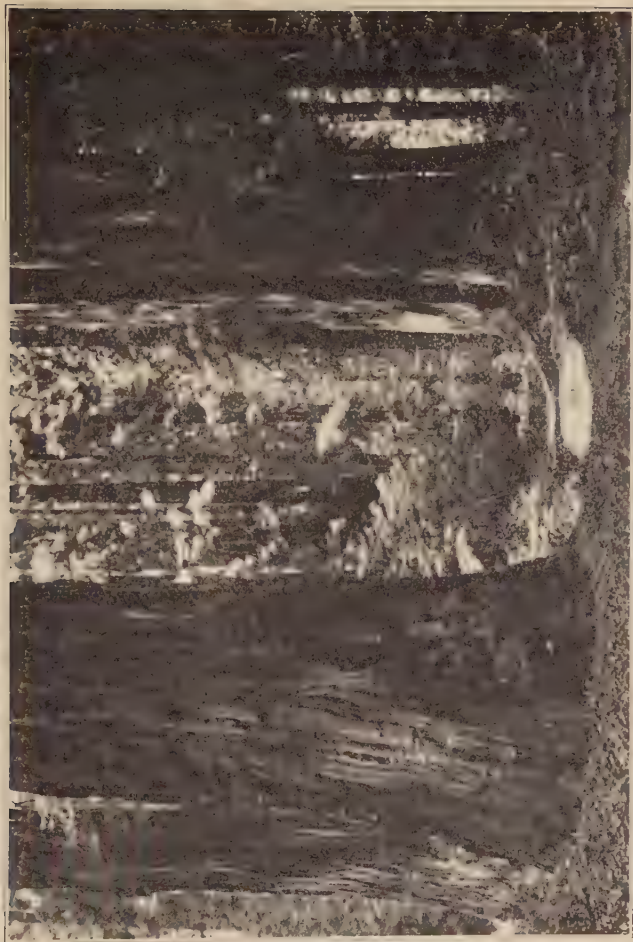
will be recorded. It is generally believed that the tallest tree on earth is found in the upper part of Bull Creek Flat and exceeds these dimensions. The result of these proportions is an impression of immense height and of graceful beauty, rather than that of the monumental solidity of the Big Tree.

The original range of the Redwoods extended from the Bay of Monterey along the coast to a point a few miles over the Oregon line, embracing a length of range of about 450 miles and a width not exceeding 40 miles.

This lateral range appears to be determined by the penetration inland of the ocean fog, which sweeps in daily along this coast. It is interesting to observe the easternmost edge of the fog bank hanging above the easternmost edge of the Redwood forest. These forests are sometimes so wet from the fog dripping from their high crowns that it is hard to tell whether it is raining or not.

One of the many amusing popular fallacies in connection with the Redwood forests is the belief that the fog is attracted and drawn inland by the trees, an interesting case of inversion of facts.

A unique feature of many of the northern Redwood groves is the amazing abundance of ferns. These ferns are extremely beautiful and reach exceptional heights and abound in species. They



AMONG THE GIANTS

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give an ancient aspect to the groves and Dr. Merriam once remarked to me, while we were lunching amid the Redwoods, that if a dinosaur should stick his head around one of the tree trunks he would find nothing in the landscape that was unfamiliar to him in Jurassic times.

The great beauty of the Redwood forests culminates in the groves of Humboldt and Del Norte counties in the northwesternmost corner of California. There are many very beautiful groves but four stand out preëminently.

The first is along the South Fork of the Eel River and the west bank of the main Eel and reaches its highest development in Bull Creek Flat and Dyerville Flat. The others are the immense Redwood Creek Grove, the Klamath River groves and the Smith River groves in Del Norte County. All are beautiful, each with some unique features of its own, but the movement to save the Redwoods began with the Eel River groves because of their supreme beauty and because of the imminence of the danger that threatened them.

This danger was partly brought about by the construction of a highway through the groves, thus rendering the timber accessible. The large companies owning this land farmed it out in small

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parcels to individual applicants who proceeded to cut the timber along the road.

The question of retaining a strip of trees along the highway is complicated by the general belief that trees will be overthrown by the wind when the adjoining forest is cut. The facts are that if a sufficiently wide belt of timber in a narrow valley be left and if the width of the strip be varied in accordance with the topography of ground, the adjoining forest can be cut without any great danger to the strip along the highway.

In 1917 the writer, in company with Dr. John C. Merriam and Professor Henry Fairfield Osborn, both members of this Club, made a motor trip through the Redwoods, visiting virtually every single grove of importance. They were so impressed with the absolutely unique beauty and the immense national value of these forests that, after visiting Bull Creek Flat, they addressed a letter to the governor of California, asking him to take steps looking to the preservation of these trees.

Following this, the writer spent the two ensuing years in an effort to organize public sentiment in California and to form a league to save these trees.

In 1919, with Stephen T. Mather, he revisited all of these groves and the movement was defi-



A REDWOOD HIGHWAY

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nitely launched. A nucleus of public sentiment, headed by two devoted and public-spirited citizens of Eureka, Judge F. A. Cutler and Mr. A. E. Connick, was already well developed in Humboldt County and outside help was welcomed. Dr. John C. Merriam, then resident in California, took the active management of the SAVE THE REDWOODS LEAGUE and has ever since devoted his time and energy to the preservation of these Redwood groves.

Mr. Mather and Mr. William Kent came forward with real cash in considerable sums and a beginning was made in the purchase of small plots along the highway where cutting was actually going on or was about to begin.

This immediate expenditure of money was rendered necessary by the fact that practically all the groves were in private ownership, many of them in the hands of large and wealthy lumbering companies who pay heavy taxes on their holdings. It cannot be expected, therefore, that these lumber companies would surrender their groves to the government without compensation, although they might be induced to donate narrow strips on condition that highways be built through these strips and their remaining holdings rendered accessible. The value of lumber, of course, depends primarily

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on its accessibility to the mill and the market. Promises of this sort must necessarily be made in advance of the road building, and the building of highways must be conditioned upon such an agreement.

No one except Governor Olcott of Oregon seemed to understand this principle, but he did much to put it in force in that state. Unfortunately, his term of office has come to an end.

The demand for the timber itself is due to certain very exceptional qualities of the Redwood. Its easy cleavage, its freedom from attacks by insects or decay and, above all, its high resistance to fire—these qualities have proved the misfortune of the trees and have rendered them in great demand for such noble purposes as railroad ties, shingles and, more recently, grape stakes.

Sympathy with the grape growers of California through the expected operation of prohibition has been misplaced as the value of their grape crops has risen greatly in the last few years, with the interesting result that Redwoods are now being destroyed to supply props for grapevines, just as the Adirondacks and Canadian forests are being swept clear to supply the pulp for Sunday newspapers. The workings of civilization may be mys-

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terious but there is little doubt that they are hostile to nature.

These were the conditions that faced the League at its organization and its first duty was to save some of the small holdings along the South Fork of the Eel where cutting was actually going on. It is only fair to say that it has met with cordial coöperation from almost every one of the small holders and with promises of help from the larger companies. One of these companies, the owner of which is Mr. A. B. Hammond, a man of very exceptional force and intelligence, has given to the League a very handsome grove thirty acres in area.

Further coöperation is expected from the other companies. The Pacific Lumber Company has a large mill on the Eel River and enormous holdings in the most important groves. Negotiations are in progress with them, looking to the postponement of cutting until such time as a large fraction of their holdings can be purchased. The company is coöperating with the League in every way and appreciates the fact that the League intends to pay fair prices for all lumber taken.

The League was originally organized under Dr. John C. Merriam as acting president. As he has been called to Washington as president of the Car-

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negie Institution, the burden of the work has lately fallen on the chairman of the executive committee, Mr. Joseph D. Grant, the exceptionally able secretary, Mr. Newton B. Drury, and the manager of the office, Mr. J. C. Sperry, who has voluntarily given one-half of his time to the interest of the League at the sacrifice of important business interests.

An immense amount of propaganda has been launched and very substantial donations have been received. Perhaps the most important of these donations was made in 1921, when a member of the Boone and Crockett Club, Dr. John C. Phillips, presented the sum of \$32,000 to the League for the purchase of a grove, thirty-five acres in extent, to be held in perpetuity as a memorial to his brother-in-law, the late Colonel Raynal C. Bolling, the first officer of high rank to fall in the World War. The Bolling Memorial Grove is situated on the South Fork of the Eel River in the Humboldt State Redwood Park.

This idea of immortalizing the memory of men who gave their lives for their country by the dedication of a Redwoods grove will ultimately play a very large part in the saving of these trees. Instead of building costly monuments of stone and bronze, why should not a portion of the beauties of the



Courtesy of H. C. Tibbets.

REDWOODS UNTOUCHED

Saving the Redwoods

land for which they made the supreme sacrifice be dedicated to their memory? The very name of the *Sequoia sempervirens* is redolent of immortality.

Some idea of the progress of the League in the two years of its active existence may be formed from the following achievements. The Humboldt State Redwood Park has been established, extending along the California State Highway between Miranda (231 miles north of San Francisco) and Dyerville Flat at the junction of the South Fork with the main Eel. The park is about twelve miles long, varying in width from one-eighth to one-half mile, and contains approximately 2,000 acres of Redwoods. All of this timber has not yet been purchased, but the establishment of the park assures the protection of practically all the main Redwood groves on the state highway north to Dyerville Flat. The state of California has bonded itself for \$300,000 and Humboldt County to the extent of \$85,000—large sums for the West—and with private donations and subscriptions the total value of timber saved thus far by the League amounts to about a half million dollars.

A donation has been promised by William P. Wharton, gifts of timber along the Highway have been made by the Pacific Lumber Company and others, and a substantial sum has been raised for

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a memorial grove to Franklin K. Lane, the first president of the League.

The League has the warmest coöperation of the California State Forestry Board and the State Highway Commission, both of which are doing everything possible to assist it. The latter Commission has now adopted definitely the policy of refusing to let contracts for the construction of new highways until the timber on the rights of way has been acquired by the counties concerned.

Splendid progress is also being made by the League in its plans for the reforestation of cut-over lands, a project of vast importance to the Pacific Coast and to the nation at large.

The Boone and Crockett Club may well be proud of the success of this movement to conserve the finest of American forests. Its founders were all members of the Club and the first man to come forward with financial aid on a large scale was also a member of the Club. Perhaps more than any one event in the history of the League, Dr. Phillips' splendid conception of a memorial grove has stimulated the interest and furthered the cause of conservation of these great and ancient groves.

Madison Grant.

American Game Protection

A Sketch

Game protection in North America has passed through three stages—has been influenced and guided by three successive motives. The first of these was selfish—in which sportsmen wished to lessen the killing of game in order that sufficient might be left alive to furnish abundant sport for themselves. This motive governed for nearly a generation. The second motive was sentimental, where a large and ever increasing number of people were interested in wild life protection because these living objects are beautiful to look at and ought to be preserved so that we and our successors may have the pleasure of seeing them. The third motive for protection is economic, and considers these wild things as assets which possess a tangible value to the community and so are worth preserving; with the further thought that they have been given to us as trustees to hold for those who are to come after us. This view holds that money expended in preserving them from destruction is

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in the nature of an insurance premium. Of these three motives, the third—the economic view—is constantly gaining strength.

Experience has shown that if these wild things are utterly destroyed, a later generation will feel that it must replace them. This replacement is often impossible, but even if it can be accomplished, the task is one of time, difficulty and great expense. It is far more economical to spend today a little money to keep these living things in existence than to replace them at a later time—or to try to replace them and fail to do so.

That the Congress has seen light in this matter is shown by its action in establishing national parks, forest reservations, game preserves and national monuments.

An outstanding feature in the accounts of America written by the first European comers was the plenitude of the game found here.

John Sparke, the chronicler of the voyage of John Hawkins, the first Englishman to visit Florida, in 1565, relates that "they found Deere in great plentie, which came upon the sands before them."

In 1610, William Strachey, in his *True Declaration of Virginia*, says: "The Turkyes of the coun-

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trie are great and fat and exceeding in plentie. The riuers from August or September to February are couered with flocks of Wildfoule; as Swannes, geese, ducke, mallard, teal, wigeons, hearons, bitters, curlewes, godwights, plouers, snights, dotrels, cormorants in such abundance as are not in all the world to be equalled."

According to Higginson, in 1630, the fowls of the air were plentiful in New England and besides the turkeys which were often killed in the woods, "in winter time this Countrey doth abound in Wild Geese, Wild Ducks, and other Sea Fowles, that a great part of the winter the planters haue eaten nothing but roastmeat of diuers Fowles which they haue killed."

Denton's *New York* (1670) describes the game of Long Island "and how prodigal, if I may so say, hath Nature been to furnish the Country with all sorts of wilde Beasts and Fowle, which every one hath an interest in and may hunt at his pleasure; where besides the pleasure in hunting, he may furnish his house with excellent fat Venison, Turkeys, Geese, Heath-Hens, Cranes, Swans, Ducks, Pidgeons and the like."

Hubbard, in 1680, describing Long Island, comments on the great numbers of wild fowl and enumerates Turkeys, Heath-Hens, Quail, Part-

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ridges, Pigeons, Cranes, Geese of several sorts, Brant, Ducks, Widgeons, Teal, and others.

Berkeley records in *The History and Present State of Virginia* that in his time, 1705, buffalo were still so abundant in Virginia that the colonists planned to domesticate them for food. It is needless to multiply quotations.

The settlers found game in such supply that in the first years it afforded a substantial part of their subsistence, and later, those men who carried civilization westward to the remote wilderness were almost entirely dependent on the game for their food supply. As in the East so in the West. Those who made exploration of the interior in advance of the slow progress of settlement, reported in the western country a yet greater abundance of game.

The accounts of the early missionaries, some of whom accompanied the first explorers, contain constant references to the abundance of the wild life. Pere Allouez, the Jesuit priest who went westward with La Salle in 1680, wrote that in a certain territory between Lake Erie and Lake Michigan—near where Ohio, Michigan and Indiana come together—there were some dry meadows of good land which were filled with incredible numbers of bears, stags, deer and turkeys, on

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which the wolves made fierce war. This game was so little wild that on a number of occasions they were able to protect themselves from it only by firing shots at it. In other words, apparently these wild animals were so numerous that there was danger that they would run over the travelers, and were kept off only by shooting at them.* In the first half of the last century we have accounts of plains travelers being obliged by the same means to keep off buffalo which threatened to run over them.

In the accounts by other early travelers and traders are found frequent allusions to the numbers of food animals in primitive times. Notable among these is the statement by Perrot that in the winter of 1670-1671 the Saulteur Indians on Manitoulin Island captured twenty-four hundred moose in snares. The reports of early fur traders in the North make constant mention of the hosts of buffalo and other animals, and as recently as the building of the first railroads across the plains,

* "Il y a aussy quelques campagnes seches et de tres-bonnes terres remplies d'un nombre incroyable d'ours, cerfs, chevreuils et poules d'Inde, a qui les loups font une rude guerre et qui sont si peu farouches que nous avons este plusieurs fois en danger de ne nous en pouvoir defendre que par des coups de fusil." (Margry, II, p. 97.)

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the trains were often stopped and obliged to wait for the passage of the herds.

THE INDIAN AS GAME PROTECTOR

It is interesting and instructive to consider the attitude which was maintained by the Indian toward the game as his food supply and the ways he adopted to conserve it.

Centuries before the white man came, the Indian, through the necessities of his life, had worked out systems of game protection, the object of which was to provide a continuing supply of food and of fur. His reasons were in no degree sentimental. He cared nothing about the preservation of species or the sport of hunting—he knew nothing of sport—but he felt it essential that the wild animals on which in large measure he depended for subsistence should continue to exist and in considerable numbers, in order that food might always be plenty and the supply go as far as possible. In other words, his reasons were economic. One of the methods he had worked out, and which was practiced on the western plains within the memory of men still living, was the communal chase of the buffalo.

Since the buffalo contributed very largely to the support of many of the plains tribes and were

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found in great herds, it was important that when hunted they should, if possible, be taken in numbers sufficient to supply food for the whole tribe,—not merely food for today, but enough to last for a long time. In the later days, after the Indians had obtained horses and killed the buffalo by the chase, the hunt was systematized, in order that every man in the tribe might have an equal chance with every other man to secure the food required. When a surround was to be made, in order to make sure that the buffalo should not be alarmed, individual hunting by members of the tribe was forbidden. When the time came for the chase all the men took part in it; it was organized.

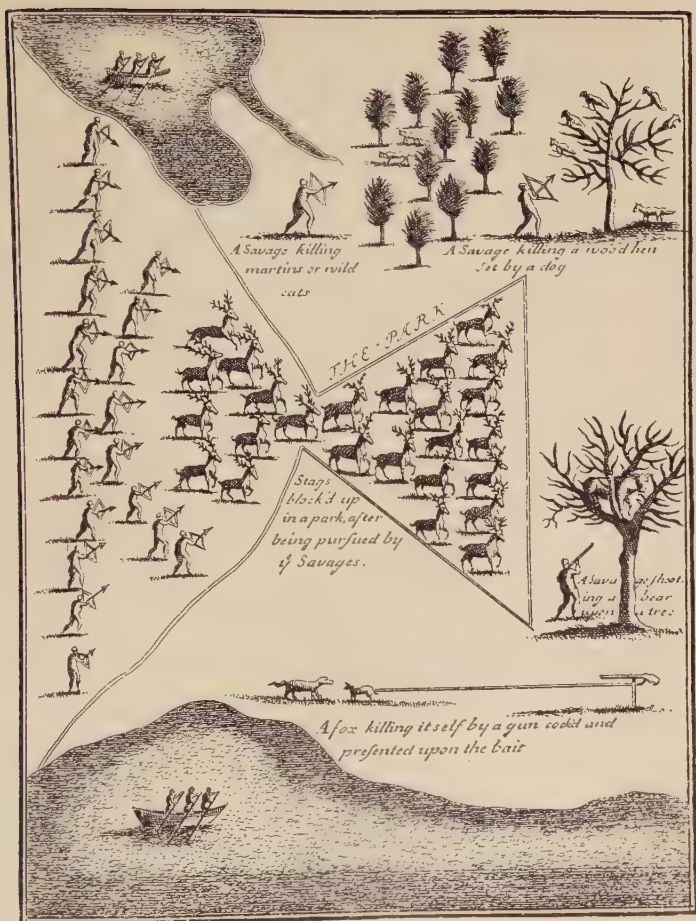
The laws in buffalo hunting were well understood and their usefulness acknowledged. They were generally observed, and the regulations, strictly enforced, were seldom violated. If such violations took place they were severely punished.

The Indian hunter had worked out for himself the conclusion that a wasteful destruction of the animals on which he subsisted might bring suffering to him and his, and for that reason he protected them from such wasteful destruction, and practiced methods of economy in hunting that were wise and far-seeing. He had profited by the experience of the generations before him.

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In a letter written in 1687, from somewhere near Lake Champlain, La Hontan pays incidental tribute to the forethought of his savage companions. He describes the driving of elk—wapiti—into “a sort of a Park or Fence made of Trees, fell’d one upon another and interlac’d with Thorns and Branches, with a quadrangular inclosure of Stakes at the End of it, the entry of which was very narrow.” He saw the “Harts” driven into this pound, and says: “We found thirty-five Harts in the place, and, if the Park had been better fenc’d, we might have had above sixty; for the nimblest and lightest of ’em, skip’d over before they came to enter the Inclosure. We kill’d a great many of ’em, but spar’d the Dams because they were great with young.”

In other ways the Indian showed foresight in protecting game and fur for himself and his descendants. In many parts of the wooded country, especially in the North, each family of Indians possessed its own territory for hunting and for trapping, and other members of the tribe did not trespass on this ground. The animals found in this territory were considered the property of the family and only its members possessed the right to take them. For another to kill them was a seri-



PRIMITIVE HUNTING
La Hontan, 1703

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ous violation of tribal custom—the appropriation of food or fur which belonged to other persons. Such violation might be punished in a variety of ways; but the law, being generally understood, was seldom disregarded.

Family ownership of such hunting grounds and respect for such ownership were not confined to one portion of the country, nor to any one linguistic family or group of tribes. It was, and is, practiced among the Algonquins (Ojibwas), among the Athapascans (Chippewyans, and Nahane) and among the Eskimo (Aleuts). No doubt many other groups had the same custom, which, however, does not seem to have prevailed among the buffalo Indians of the plains nor among the Indians of the Rocky Mountains. An interesting paper dealing with family hunting territories and social life of certain Algonquin bands has been written by Dr. F. G. Speck; and many years ago I called attention to the custom among other tribes.

On these family hunting grounds their owners exercised great care to protect the food animals and the fur; and they taught their young people—now growing up and to follow them in control of the hunting and the trapping—never to kill animals to such an extent as to reduce the breeding

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stock. In this matter they were almost as careful as is the white farmer with his domestic herds. The territories were regulated wisely. Close count was kept of the game, so that the owner of the hunting grounds knew just about how many of each kind of animal it held. This number regulated the killing. The beaver and other fur bearers were watched and kept account of and only a certain proportion was taken. No hunter ever destroyed all the inhabitants of a beaver house. Moreover, after certain portions of a man's hunting ground had been hunted for one year, these portions were often allowed to remain undisturbed the following year.

The Indian took these precautions in behalf of himself and his immediate family, but not alone for these. He thought also of the welfare of his descendants—those who were to come after him in the future, generations which he himself would never see. In other words, he regarded himself as the custodian of the hunting grounds, which he was to occupy and use for the period of his life, and then to hand down in as good condition as he had received them, to his children, who in turn would pass them on to their children, and so on to the end of time. The practice closely parallels the view that the Indian took of the ownership of the

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tribal lands, of which he regarded himself merely as the life tenant. His feeling as to land occupancy I have explained in another place :

“According to his view neither the tribe nor any member of it has in any piece of land rights other than the right to occupy and use it, the individual for life in common with his fellows, the tribe forever to the exclusion of unfriendly peoples. In the past the old people occupied this land, hunted over it, gathered fruits from it, or cultivated it; and as they passed away the same operations were performed by one generation after another; and after those now occupying it shall have passed from life, their children and their children’s children for all succeeding generations shall have in it the same rights that the people of the past have had, and those of the present possess, but no others. The land cannot be sold by the individual or the tribe.”

We sometimes think and speak of the Indian as an improvident savage, but in his control of the game supply he showed a wisdom which it has taken his white successors generations to acquire. Had we followed his ways from the beginning, the story of American big game would have been quite different.

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BIG GAME DESTRUCTION

The settlement of the Atlantic Coast spread at first very, very slowly; yet before the Revolutionary War was ended, many settlers had gone West into the Ohio Valley. So great was this influx that Kentucky was ready for statehood in 1792, Tennessee in 1796 and Ohio in 1802. In the year 1790, the center of population was in eastern Maryland; in 1800 it was just north of Washington; by 1820 it was in West Virginia, and by 1860 it was far into Ohio. In 1807 St. Louis had two hundred houses, but by 1820 it had six hundred houses and was the center of the fur trade for the United States.

During the years between 1820 and 1860, the settlements moved westward with constantly accelerated progress, and the development of the land for a large and sedentary population soon swept out of existence most of the native wild life. The prairies were cultivated, the forests cut down, the swamps and little lakes drained, and a constantly increasing extent of country was put under the plow. All this reduced the area habitable by the wild creatures, whether mammals or birds. There was less space for them to live in, fewer places where they might breed. As population grew and spread, the reduction of area continued. The

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territory possible for occupation by the native wild life grew constantly smaller and this wild life disappeared. It was either destroyed or it fled the country. Land that had supported wild birds and mammals was now occupied by the farmer, his crops and his live stock.

We say now that all the game has been killed off, and in fact some part of it has been killed; but its total extermination came from the fact that after much of the game had been killed, the remainder was crowded off, and none was left to reproduce its kind.

So complete has been the obliteration of some species in the East that they have even passed out of the memory of the people. The average man does not know that the great auk existed. It is no longer in the common consciousness that the buffalo and the elk ranged in some Atlantic States, and that the wild turkey, the pinnated grouse and the passenger pigeon were on the eastern seaboard.

In the great West, however, the supply of game continued in extraordinary numbers until a much later period, even down to the time of the building of the Pacific railroads. Then followed the epoch of destruction, the depletion progressing at a startling rate, until the conditions were reached

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which prevail today. It is in the West that—because of the original vast supply, its continuance to so late a time, and the rapidity and completeness of its destruction—we find the most striking illustration of the changes in the game conditions of the continent.

The mighty herds of buffalo ranging the plains, the undisturbed existence of countless elk, deer and antelope, the invasion of the country by the railroads, the onslaughts of the skin hunters, the rapid killing off of the game and its practical extermination, the conversion of the game ranges into cattle ranges and of the cattle ranges into ranch lands, our tardy awakening to the waste of our game, a new evaluation of the wild life as a resource of vast economic importance, the enactment of legislation to save the remnant, the provision of refuges for harboring it—these successive phases of our big-game history followed one another so rapidly and in a period so recent and so short as to fall within the term of a lifetime.

As an explorer in the West in the early seventies, a man hunting in the game regions for successive seasons, and as one who has been personally interested and actively engaged in game protection, I myself have witnessed the whole course of these changing conditions. Perhaps no

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other fact so well illustrates the rapidity of the change as does this, that it may be described by one who has seen it all.

With the building of the first railroad across the continent, the then Far West—the country still occupied by the buffalo—was rendered accessible; and it became practicable to commercialize the product of the great game found there. During that building, the contractors hired hunters to kill game to feed the construction camps and as soon as the road was in operation buffalo were hunted for their hides. This was in 1872, and by 1874 the game had been pretty thoroughly driven away from the lines of the Union Pacific and Kansas Pacific railroads, all that were within easy reach having been slaughtered and the hides shipped in. The buffalo had been split into two herds, one north and one south of the Union Pacific Railroad. In 1874 *Forest and Stream*,* protesting against the enormous destruction of buffalo, urged Congress to pass laws to put an end to it. Congress felt little interest, however. A bill was passed but failed for lack of the President's signature. Army officers of high rank declared that the buffalo ought to be destroyed because when they had been exterminated the Indians then at war with

* In editorials written by the late Charles Hallock.

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the United States would be without means of subsistence and would be obliged to come into the agencies for food and so would be under the control of the troops. In 1876 another bill passed the House, but got no farther.

No effort was made to protect the buffalo by the Federal Government, or by any territory or state where they were found, except Idaho.

The killing of smaller game for the hides had also begun in other regions, particularly in Montana, where the Missouri River steamboats from Fort Benton furnished a means of getting the hides to the market in Bismarck, which in 1874 was the end of the Northern Pacific Railroad. In 1875, while traveling through Montana, I frequently saw parties of skin hunters engaged in killing elk, deer and antelope for their hides, and their wagon-loads of flat dried skins stacked up as high as loads of hay, on the way to Fort Benton to be shipped down the river. By this time also the buffalo skinners had reached Montana, but as yet had made only a beginning. Most of the fresh buffalo carcasses that were now and then found on the prairie had been shot down in mere wantonness by persons traveling through the country, who killed the great animals "for fun."

In a report made in 1875 to Colonel William

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Ludlow to accompany his *Reconnaissance from Carroll, Montana, to the Yellowstone National Park and Return*, I said about this: "It may not be out of place here, to call your attention to the terrible destruction of large game, for the hides alone, which is constantly going on in those portions of Montana and Wyoming through which we passed. Buffalo, elk, mule-deer and antelope are being slaughtered by thousands each year, without regard to age or sex, and at all seasons. Of the vast majority of the animals killed, the hide only is taken. Females of all these species are as eagerly pursued in the spring, when just about to bring forth their young, as at any other time.

"It is estimated that during the winter of 1874-1875 not less than three thousand elk were killed for their hides alone in the valley of the Yellowstone, between the mouth of Trail Creek and the Hot Springs. If this be true, what must have been the number for both the territories? Buffalo and mule-deer suffer even more severely than the elk, and antelope nearly as much. The territories referred to have game laws, but, of course, they are imperfect, and cannot, in the present condition of the country, be enforced. Much, however, might be done to prevent the reckless destruction of the animals to which I have referred, by the officers

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stationed on the frontier, and a little exertion in this direction would be well repaid by the increase of large game in the vicinity of the posts where it was not unnecessarily and wantonly destroyed. At one or two points, notably Camp Baker, efforts have been made to drive off the skin hunters, and with such success that the officers have very fine hunting within easy reach. The general feeling of the better class of frontiersmen, guides, hunters and settlers, is strongly against those who are engaged in this work of butchery, and all, I think, would be glad to have this wholesale and short-sighted slaughter put a stop to. It is certain that, unless in some way the destruction of these animals can be checked, the large game still so abundant in some localities will ere long be exterminated."

In the *Penn Monthly*, for March, 1876, the late Dr. J. A. Allen, afterward a member of the Boone and Crockett Club, made the suggestion that a reservation should be set aside for buffalo where the species should be protected from molestation and the race might be preserved. This was probably the very first suggestion ever made for an American big-game reservation, though of course the Yellowstone Park, in which, later, hunting was forbidden, had been set aside in 1872.

The history of buffalo extermination has been

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told with much fullness by Dr. Allen, Dr. Hornaday and others. The destruction was completed in the year 1883, though a few stragglers survived for some years after. Most of us then deemed it a mercenary and wanton butchery. We know now that the extermination was a necessary part of the development of the country.* The buffalo having

* This very thing has taken place in South Africa, and today an event is in progress which threatens the extermination of a most interesting species. The provincial council of the Province of the Cape of Good Hope recently passed a decree authorizing the destruction of the herd of elephants in the Addo Bush Forest Reserve, and this small and hitherto carefully preserved remnant of a species that once ranged over much of South Africa seems doomed.

Until recently the Addo Bush near Port Elizabeth was a waterless area in the center of which about six thousand acres had been set aside as a reserve for the elephants. Recently, however, water has been brought onto the land from Sunday River, making valuable the farms which surround this reserve. These one or two hundred animals in the reserve are the only surviving examples of a subspecies of elephant, and their destruction is greatly to be deplored. Elephants have already been exterminated in Zululand and in southern Rhodesia, though some are said to exist in the western Transvaal. These are being hunted constantly and are growing fewer in numbers. There may be some left in the Knysna Forest, Cape Colony, but this is in doubt. The provincial council of the Cape of Good Hope has given much consideration to the case of the Addo Bush elephants and has made careful investigation of the matter through a special committee.

The elephants leave their reserves in search of food and water, destroy the irrigating canals by crossing them and by bathing in them, break down fences, destroy crops, stampede

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been destroyed, their place was taken by range cattle and horses, and then after a time the range stock was crowded out by the homesteader and the farmer. The old wild buffalo country now produces crops that help to feed a hungry world.

Except in a few carefully protected localities in the United States, and in Canada—the national parks and preserves—and in some very sparsely inhabited regions in the West and Southwest, big game—except the white-tailed deer—has disappeared before the settlement of the country. For most of us the old-time use of the hunting-rifle in the United States has passed, never to return.

EFFORTS FOR PRESERVATION

In early colonial times the new country swarmed with wild creatures; the lands and waters were crowded with birds and mammals to the limit of their support. Game was free to all, and

cattle and frighten people. The only method of controlling them, according to the committee, would be by a fence thirteen miles in length; and a fence strong enough to hold the animals would cost one hundred thousand dollars. A supply of water would be required and there is much doubt if the area proposed to be enclosed would provide enough natural food to support the herd.

Here is a case where there seems no escape from the conclusion that these last elephants of South Africa must give way before civilization and development.

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liberty to take it at will was regarded as a universal right. For a long time there seemed to be no necessity to restrict this right of capture. When, later, attempts were made to limit the privilege of taking game, these were resented as efforts to deprive the people of something that belonged to them. Legislation to protect some forms of game was initiated in the Colonies in the seventeenth century, but the laws then placed on the statute books were nothing more than an inheritance from English ancestors and were never enforced. It was only in the nineteenth century that sportsmen and naturalists began to awaken to the danger of extermination which threatened many of our wild species.

The first active steps looking toward game protection in the United States were taken in New York early in the year 1844, when was established the New York Association for the Protection of Game, which thus has now behind it a career of three-quarters of a century. For many years it labored alone, supported by its own enthusiasm and its own contributions. Its membership included some of the best New York sportsmen and it gradually built up, first among residents of New York City and later in other communities, a spirit

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for game protection which has increased and broadened, with results which we see today.

At the time sportsmen had become numerous and the city furnished a market which encouraged professional gunners to kill game birds for sale. The reduction of the game supply in near-by territory alarmed sportsmen and led to the founding of the Association. Among its members were Henry W. Herbert (Frank Forester), James Harper, Genio C. Scott, Recorder Hackett, Charles Banks, Charles E. Whitehead, Royal Phelps and Robert B. Roosevelt, all names conspicuous in the history of American game protection and gratefully remembered. They were men of position and influence and of much energy. They were in earnest, and by their activities and example gave new dignity to the sports of the field, commanded respect for the Association and its cause, and encouraged people in other places to make efforts in the same direction. It was soon learned that scattered about over the country were many persons greatly interested in wild life who felt that the game should be protected, and these, when they became aware of the existence of the New York Association, put themselves in communication with it and often became members. Thus its influence was constantly extending.

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The Association naturally devoted itself to work in New York State, and after a time secured from the Legislature the passage of its draft of a law by which the possession of game out of season was made not less a violation of the law than the illegal taking of game. It was this enactment that made game law enforcement possible in this country.

Royal Phelps, for many years the president, was an energetic and active game protector. In the law books his name is found as plaintiff in the case of Phelps *vs.* Racey, a suit brought against a game dealer for having quail in possession in the close season. This was carried through all the courts, and finally decided in favor of the Association. The case was thus a very important one, because it was a precedent establishing principles of law as to the control of the sale of game, applying not only in the New York market, but everywhere. The Phelps-Racey case is referred to in almost every game law action that comes up. By its course in carrying this case to the court of last resort in the state, the New York Association put the whole country under obligations which should never be forgotten.

The Association's seal, devised by Wakeman Holberton, long the secretary, displays a wood-

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cock in flight, with the legend *Non nobis solum*—Not for ourselves alone—thus suggesting, perhaps for the first time, the ideal now accepted by all sportsmen that the gunners of one generation are, in fact, trustees of the game, to hold and use it for their time and to hand it down to those who are to follow. The idea was well expressed by Theodore Roosevelt when he said, "Wild beasts and birds are by right not the property merely of the people of today, but the property of the unborn generations, whose belongings we have no right to squander." This repeats the Indian sentiment already mentioned.

Soon after the retirement of Royal Phelps in 1877, Robert B. Roosevelt was elected president and held office until his death. Charles E. Whitehead, member of the Boone and Crockett Club, able lawyer, entertaining writer, enthusiastic angler and delightful companion, was for many years the Association's counsel and one of its most powerful arms.

These three men, with their associates, first gave expression to a sentiment in behalf of game protection which already existed in some degree and was slowly spreading and growing stronger. Momentum was added by the weekly teachings of *Forest and Stream*, founded by Charles Hallock

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in 1873, and later still, by the activities of the Boone and Crockett Club and other associations which sprang up from time to time. Nevertheless, at the beginning, the cause of game protection had many obstacles to overcome. The most serious were popular indifference and misunderstanding.

The proportion of sportsmen in the community was small and little interest was felt by others; and since in those days, as now, the absorbing question to most people was how to earn a living or to make more money, the men who enjoyed shooting or fishing were looked upon as idlers and ne'er-do-wells, for it was thought that these pursuits were mere excuses for laziness—the avoidance of work. It was not until about the year 1880 that the status of the shooter and the fisherman began to rise in public estimation, his motives to be comprehended, and the old prejudice against gun and rod and dog to be given up.

Game protection had also to contend with inherited prejudices, as well as to overcome the selfishness of people jealous of their own supposed rights and suspicious of the motives of anyone inclined to interfere with those rights.

The growth of the sentiment for game protection at first was slow, but it was steady. For the first thirty years following the establishment of

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the New York Association, during which only a very few persons were interested in the effort to protect the game, the endeavors were usually local, often feeble, spasmodic and ill-directed. The only means of influencing others was by personal persuasion and this was slow and difficult. It was not until 1875 or thereabouts that more general efforts were made to educate people and to arouse a public sentiment that should insist on the protection of wild creatures.

About that time journals were established which were devoted to shooting and fishing and natural history, and to the increase of the supply of fish and game. At first, undertaking a novel task, they worked inefficiently. Nevertheless, little by little they extended their sphere of influence, reached sportsmen in many widening fields, and, preaching earnestly the doctrine of protection, sought to make new converts and to give encouragement and assistance to those already interested in the movement. As the journals of sport discussed it more and more, the daily newspapers began to notice the subject, and at length wrote of it from their own point of view. In a few years a considerable propaganda was set on foot. The protective movement was taken up by the anglers, and much attention was given to fish culture, which has since de-

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veloped into so important a factor in the national food supply. Closely akin to the preservation of game was the preservation of forests, in which for a number of years a few men had been working against constant discouragement. In a *Brief History of the Boone and Crockett Club* I have related how the forestry advocates secured the Act of March 3, 1891, under which that fine old soldier, General John W. Noble, a member of the Club, set aside the first forest reservation.

SPECIAL ABUSES

It took long to overcome the narrow views of opponents of game preservation and the inertia of that large public which cared nothing about it and did not realize that protection was actually for the general good and not for any one class. Gradually intelligent citizens were made to see this and their influence was effective with courts, legislators and executives. The results of all this education have been made manifest during the early years of this century.

Especially destructive of wild life was the practice of shooting wild fowl and shore birds at all seasons, the work of the market hunter, who shot as long as he could sell his game, and that of the

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plumage hunter, who by destroying the insect eating species brought incalculable loss to agriculture.

As has already been said, the waters and the woods were crowded with wild birds when the colonists reached these shores. At that time wild fowl bred everywhere, but as a result of molestation in the spring, they ceased to breed in their old-time summer haunts and moved on farther north to regions less frequented by man, where they could hatch and rear their broods without being disturbed. For many years, therefore, wild fowl have no longer bred near the settlements of man and a generation of people has grown up quite ignorant of the fact that they formerly bred in our New England and Middle States, and believing that it is instinct which leads them to seek the Far North to rear their young.

The fact is, however, that, if undisturbed, many wild ducks will still rear their young in a well-settled country. Since the passage of the Migratory Bird Treaty Act this is being demonstrated each year in the East and West, and ponds and lakes, on which for generations ducks had not been seen except during the migration, are in summer now crowded with spring broods of newly hatched wild fowl.

The shooting of wild fowl and shore birds in

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the spring continued up to about 1895, although at different times and in a few states laws forbidding the practice had been enacted but were not regarded. Those which for a time stood on the statute books of Rhode Island (1846), Michigan (1859) and Massachusetts (1870), were soon repealed, and matters went on in the old way.

The shore birds appeared in spring and fall in such multitudes that it was thought they could never be exterminated and needed no protection; a common belief, held also as to the passenger pigeon and to the buffalo.

In the decade between 1880 and 1890 the *Forest and Stream* constantly urged the abolition of spring shooting, and while at the moment not much was accomplished, the attacks were not wasted. Their educational value was shown in later years—between 1895 and 1905—when some states passed laws forbidding spring shooting, kept them on the statute books, and enforced them to some extent. A sentiment against spring shooting began to be felt over the whole country and at length grew strong.

The market hunter, who devoted much of his time to killing game and turned the product of his gun into money, destroyed what most men considered to be far more than his share of the game,

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and was an object of reprobation by him who called himself a true sportsman.

While many market hunters were just as good sportsmen as ever pulled trigger, the fact that they made merchandise of the game and were thus in a position to give practically all their time to killing it, made them very destructive, and this excessive killing became a serious factor in game diminution. It is now generally recognized that the commercialization of game means its extinction.

Appreciating this, *Forest and Stream* in 1894 startled the shooting public by announcing that the sale of game ought to be forbidden at all times. At first the declaration was received with ridicule, but the principle soon became recognized as an effective means of game protection, somewhat later was incorporated in the laws of most of the states, and is now, as to migratory birds, a regulation of the Federal Government.

The practice of using the plumage of birds on women's dress began about 1882 and soon became fashionable. Sportsmen and naturalists alike combated this tendency, but without much success. In 1886 *Forest and Stream* established the Audubon Society for the protection of birds and for several years carried it on without any assistance from

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others. It thus originated this phase of protection and gave it a momentum which has increased as the years have passed. In the same year the Committee on the Protection of Birds of the American Ornithologists Union prepared a model law, one provision of which defined game birds, and this model law was at once adopted in Massachusetts and New York and is at present the foundation of the law in most states of the Union and in the Canadian provinces.

The Committee on the Protection of Birds of the American Ornithologists Union did much good work and the Audubon Society after a brief period of quiescence again became active and, under the energetic leadership of William Dutcher, accomplished great things in the protection of insectivorous and generally of non-game birds. It is today a potent force in the land.

The task of educating a whole nation to the importance of new ideas unconnected with immediate profit was not a small one and for many years the growth of the feeling for wild life preservation was slow and the work of fighting for it difficult and most discouraging. Years passed without any apparent progress, yet all the time hard work was being done—more seed was being sown. Those who had begun the struggle were convinced of the

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economic importance of the principle for which they were striving and having put their hands to the plow did not look back. Gradually the seed began to promise a crop. As the years passed, more and more people became interested and the ranks grew stronger, until at last the body of wild life protectors became a force in the land and today constitute an element which is sure of a hearing whenever it is demanded. The public has been educated to a point where it understands that conservation of wild life is for the general good.

STRENGTH OF THE PROTECTIVE SENTIMENT

The present strength of the conservation idea is shown by the fact that those eager to destroy the wild creatures now feel obliged to offer valid reasons to justify killing them. Such people realize that public opinion demands the protection of wild life and that without its assent the work of destruction will not be permitted.

In Alaska bitterness is expressed over the protection of the great brown bears. Because of the value of their fur and the sport of hunting them, those who wish to make a profit from them declare that protection should be removed from the bears and a traffic in their hides should be permitted. They say the bears are ferocious—so dangerous

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that it is hazardous for anyone to venture inland from the coast. Yet thousands of people have been traveling about over Alaska for twenty or thirty years and the authentic attacks on human beings by unwounded bears could be counted on the fingers of the hands. It is said also that bears destroy cattle and sheep, but the places in Alaska where cattle and sheep can freely range are not many and it is not to be supposed that this territory will ever become a stock country. The bears are few in number, occupy a narrow range, and might easily be exterminated. They are unique and should be protected.

A few years ago a cry went up from dwellers on the Gulf of Mexico that pelicans were tremendously destructive to food fish there, but an investigation made by the Audubon Society and game commissions showed that the pelican feeds only on small surface feeding fish never taken by the commercial fisherman and of no value except as food for other fishes and for the birds.

Those who advocate wholesale destruction of wild life in these days feel that they must explain themselves; formerly this was not the case.

Temperate America has not been very long settled as world history goes. A little more than three hundred years covers the period. Yet in that time

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a dozen species of birds and mammals have become extinct—some of them in our own time—and others are on the way to extinction. It should be the concern of each one of us to put off that day as long as we can.

MIGRATORY BIRD PROTECTION

The final achievement in the long struggle for wild bird protection was accomplished in 1918. This was the enactment of legislation by which migratory birds were placed under control of the Federal Government. The United States now controls the killing of birds which spend one season of the year in the North and another in the South, and in their journeyings may pass over half a dozen states or provinces. Not long after the enactment of the Federal Law, a treaty was concluded between the United States and Great Britain for the protection of migratory birds in the two jurisdictions.

The law and the treaty provide for the federal protection of all migratory non-injurious birds. So long as law and treaty shall stand and are enforced those species will be safe.

To Hon. George Shiras, 3d, belongs the credit of originating the plan and setting on foot the movement to put migratory birds under the con-

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trol of the Federal Government, a movement which led up to the treaty with Great Britain and the passage of the Migratory Bird Treaty Act as it stands today.

Mr. Shiras introduced his original migratory bird bill in the 58th Congress, December 5, 1904. His thought was wholly new to most people and the proposition called forth a protracted discussion. Many lawyers regarded the provisions of the bill as unconstitutional and declared that it could never stand. Mr. Shiras introduced the bill for the purpose of bringing the subject before the public and promoting a full discussion. This purpose was amply accomplished.

In December, 1908, Hon. John W. Weeks, representative from Massachusetts, introduced a migratory bird bill in the 60th Congress. This called forth renewed discussion, which tended still further to clarify the public mind. The subject was long debated, and toward the end of 1911 John B. Burnham of the American Game Protective Association undertook to organize sportsmen and naturalists in behalf of the principle and in this work covered the whole country. After much effort, a simultaneous hearing on migratory bird bills was held before committees of the Senate and House. The sportsmen and naturalists present at the hear-

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ing represented forty-five states, and the testimony and feeling of all who spoke strongly favored the bills.

Somewhat later, Senator Elihu Root introduced in Congress a resolution providing for international conventions for the protection of migratory birds. The resolution did not pass, but early in 1913 a Migratory Bird Law was enacted and was approved by the President. A little later Senator McLean introduced another resolution providing for international conventions for the protection of migratory birds. This was adopted. The convention was held by representatives of Great Britain and the United States and a treaty was signed in August, 1916, between the United States and Great Britain for Canada, and a little later was ratified by both governments. An act to enable the United States to enforce the provisions of the treaty was signed by the President July 3, 1918. Canada had taken similar action, and since 1918 treaty and Act have been in full force.

The progress of the Enabling Act in the House of Representatives excited great interest among sportsmen and naturalists. When it passed the House of Representatives the vote was two hundred thirty-seven in its favor and only forty-nine against it. Its opponents made strenuous efforts to

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amend the bill so as to render it ineffective, but the House was overwhelmingly in its favor and some of the strongest members worked earnestly for its passage.

The Bureau of Biological Survey has charge of the regulations under which the birds are protected and the years that have elapsed since the original Migratory Bird Law became effective have seen a great increase in many forms of bird life. This indicates a general respect for the law, since Congress has not yet consented to appropriate funds for its adequate enforcement.

The Canadian Government has taken hold of the Migratory Bird Law with energy and efficiency. Most of the provinces of Canada have amended their laws to conform to the terms of the treaty. In cases where the provincial laws have not been amended as was hoped, efforts are being made to enforce the provisions of the treaty and to educate the public to the importance of protection of bird life.

It is believed that a large number of bird breeding sanctuaries may be established in western Canada. A Dominion Park has been created at Pelee, an important bird area in Ontario; and great breeding places of sea birds in the Gulf of St. Lawrence—Bird Rocks, Bonaventure and

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Percé Rock—all in Quebec, have been set aside as refuges where the birds shall not be molested or disturbed. Besides this, the Department of the Interior is steadily conducting a campaign of education throughout Canada which is fostering intelligent and sympathetic support for protection.

Recent action by the Department of the Interior of the Dominion in enforcing the Northwest Game Act has placed the fur-trapping and fur-trading industry under control for the first time. All white trappers and traders now operate under license.

Canada is considering the feasibility of establishing in the Far North reindeer herds, as in Alaska, and of attempting the domestication of the musk ox in the Barren Grounds. Here is a vast territory estimated as about a million square miles unsuitable for agriculture, but capable of supporting vast numbers of reindeer and musk oxen. The two species, if properly handled, would produce a great amount of meat, and if domesticated the musk oxen would yield also valuable wool. Temperate North America is being devoted more and more to the growing of farm products, with the result that within the past thirty or forty years the cattle herds which formerly occupied the free range of the West have to a great extent disappeared. It is altogether possible that if the North

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American reindeer—caribou—and the musk ox of the North can be brought under control as suggested, the contribution to the food supply by these now wholly unproductive areas may become of the greatest importance.

Thus, north of the international boundary the growth of the sentiment for protection is as strong as it is in the United States, and the work being accomplished is very important and practical.*

ELASTIC GAME LAWS

As long ago as 1912, the Game Preservation Report of the Boone and Crockett Club suggested that changes should be made in the form of the laws for the protection of game, since those then on the statute books did not afford permanent or satisfactory solution of game preservation problems because they lacked the needed elements of elasticity and quick adaptability to rapidly changing conditions. The struggle of wild life to maintain itself against increasing population, improved arms and swifter methods of getting about over the country, needed to be considered, and it was recommended that to meet changed conditions protective regulations must be susceptible of quick

* As a matter of history there is given in an appendix a chronology of legislation by Congress as to Migratory Birds.

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changes. Commissions for the preservation of game ought to be given elastic powers and held to full responsibility. They should have authority promptly to change seasons, closing or opening them, lengthening or shortening them, and increasing or decreasing bag limits. They should have the power to prohibit shooting on certain areas of land and water, to establish rest days on which game birds or mammals should not be disturbed, and generally should have full and complete powers to establish such regulations to protect the game as may be called for by changing conditions.

Something of this elasticity was found in the Alaska Game Law at that time, and it worked well. The importance of the suggestion was at once recognized by protectors, and in recent years certain states, east and west, have enacted statutes which tend to carry out these suggestions.

NATIONAL PARKS, PRESERVES, BIRD REFUGES AND FORESTS

During the past few years a strong public sentiment has come to be felt in behalf of national parks, game preserves, bird refuges and forest care. Of these areas for wild life protection the national parks are the oldest, the Yellowstone Park having been set aside by Congress in 1872.

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This initial step in national reservation establishment was due largely to the efforts of the late N. P. Langford. Although not himself the originator of the proposal to set aside this park for the benefit of the people, yet his enthusiasm and hard work did much to educate the public as to the importance of what was intended, and it was chiefly that work that created the public sentiment that led Congress to pass the Organic Act.

Sitting by the campfire in what is now the Park, in 1870, Judge Cornelius Hedges was the first to express the view that the wonders of the Yellowstone should be preserved as a park for the benefit of the whole people; Dr. F. V. Hayden afterward examined the region and reported on it, and for two years Langford worked with tongue and pen—on the lecture platform and in the periodical press—to show the public what such a park would mean. Some others of the national parks have been set aside chiefly through the enthusiasm and hard work of some single individual who knew the regions and had the vision to foresee the public needs of the future.

There are now nineteen national parks with a total area of more than ten thousand square miles, and in all of them wild life is carefully protected, or will be so when adequate appropriations shall

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have been made for those parks most recently created. Most of the parks are in the West, but one is in New England, on Mt. Desert, and one in Hawaii. Within the boundaries of one or other of them are found all the species of the big game of temperate North America. Some of the parks have at times been exposed to real dangers, for they have offered to the politician, the speculator and the grafter a tempting field for an exploitation which seriously threatened the public rights. Much work has been done to protect the national parks for the public—which owns them—by the Council on National Parks, Forests and Wild Life, the National Parks Association and by other bodies of public-spirited citizens.

As time goes on, more national parks should be set aside and some of those now existing should be enlarged. On the other hand, the establishment of new parks should be carefully considered and the departments in Washington should agree on the areas and the boundaries of those proposed.*

NATIONAL GAME PRESERVES

At different points in the western country have been established national game preserves devoted

* A list of the national parks in the United States and Alaska, with dates of establishment, areas and some important characteristics of each, will be found in Appendix D.

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to the rearing and increase of big game. Some of these are the National Bison Range in Montana, the Wichita Game Refuge in Oklahoma, and the Fire Island Moose Reservation in Cooks Inlet, Alaska. The Bison Range in Montana and the Wichita Game Refuge are stocked with buffalo, and on each reservation there are elk and deer, and on the Bison Range there were some antelope.

The Dominion of Canada has done a great work in the setting aside of national parks and game reserves.

NATIONAL MONUMENTS

National monuments were created originally for the preservation of American antiquities—to put an end to the looting, by curiosity hunters and commercial antiquarians, of prehistoric Indian communal dwellings of the West. Later their purpose was broadened to include the preservation of historic landmarks, historic and prehistoric structures and, generally, objects of historic and scientific interest, situated on land owned or controlled by the government.

While these monuments are not declared to be for the protection of wild life, yet actually they are wild life refuges because the regulations prescribed for them forbid the use of firearms. The

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first national monument was established in 1906, and there are now more than thirty, some with an area of but a few acres, and some very large. The Verendrye Monument in North Dakota includes more than two hundred and fifty thousand acres. The Mt. Olympus Monument in Washington has nine hundred thousand acres, and the Katmai Monument in Alaska, more than a million acres.

These national monuments are administered by three departments of the government, War, Interior and Agriculture.

Some of the monuments might well be made national parks—as was recently done with the Grand Canon and Zion monuments—and all should be carefully preserved.

FEDERAL BIRD REFUGES

In 1903, Theodore Roosevelt set aside the first federal bird reservation on Pelican Island in Florida, and during the following years he established almost fifty more, setting an example which, in a less degree, has been followed by later presidents, so that there are now over one hundred bird reservations, in about twenty states and two territories. Of these, the most remote is the Hawaiian reservation for the protection of native birds, which includes the famous Laysan and other

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islands and reefs. This refuge possesses a peculiar interest because on it are found several birds unknown elsewhere and, in the case of each species, exceedingly few in number, so that at almost any time they may become extinct as other Hawaiian species have vanished in recent years.

The bird reservations for the most part include areas where birds breed and most of these birds are waterfowl. Those in Florida and on the Gulf Coast are occupied by herons, pelicans, gulls and terns, while some of the refuges of the North are great breeding places for wild fowl. Oregon, Washington and Alaska contain many bird refuges. In the case of two of the most important—Klamath Lake and Malheur Lake—commercial projects have almost accomplished the destruction of the breeding grounds, the water has been taken away and the breeding places destroyed.

These refuges are protected by government wardens; and the National Association of Audubon Societies coöperates with the Department of Agriculture and has furnished some of the money and some of the men for the work.

Though primarily established for bird protection, some of the reservations serve a useful purpose also in protecting mammalian life. On the Mosquito Inlet Reservation in Florida, the manati

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and the porpoise find protection, and the Biological Survey reports that since the establishment of the reservation these species have been increasing. On the Bogoslof Reservation in Bering Sea there are large colonies of sea lions, while the reefs and islands of the Hawaiian Island Reservation furnish a safe resort for a rare seal of the genus *Monachus*, which is related to the tropical seal of the Gulf of Mexico. Some bird refuges also are utilized in part as big-game preserves, where our native wild animals are kept and bred.

Besides the different reservations already mentioned, some national reservations and parts of national forest reserves have been made state game preserves, or state game refuges. In 1909 Minnesota established the magnificent Superior Game Preserve, in the Superior National Forest. This is on the international boundary line and adjacent to a large game preserve in Canada. The state game preserves on public lands are supposed to be protected by the game laws of the states in which they are located.

To these reservations are to be added not a few others, usually of small size and minor importance, such as Fishery, Lighthouse, Military and Naval reservations, on most of which the wild life is protected.

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FOREST RESERVATIONS

In thirty years the national forests have grown from nothing to great and valuable possessions. The work of the Forest Service has been well performed and has resulted in a great increase in the national wealth.

Col. Henry S. Graves, for ten years United States Forester, is not only most accomplished in his own department, but is deeply interested as well in the preservation of the game on the reserves. Col. Wm. B. Greeley, the present United States Forester, is similarly interested in game. The Forest Service has done much to preserve this large game, and is constantly acquiring more and more information about it, and so becoming better equipped for its care and protection. In many districts of the West, the federal forest wardens have been appointed state game wardens as well, and are thus in a position to enforce the state laws. We believe that the day is not distant when the Forest Service will possess a reasonably accurate census of most of the large game in the forest reserves, and a knowledge of the numbers of these species in certain districts will be of great help in protecting them.

In 1919 Colonel Graves, with the assistance of

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the Chief of the Biological Survey, inaugurated a plan for the preservation of the Yellowstone Park elk from starvation in winter. It involves the purchase of considerable areas of land north and south of the Yellowstone Park, which it is believed would produce sufficient hay to carry the elk herds through any winter.

Many years ago, the Boone and Crockett Club originated the idea of establishing game refuges—regions where the wild animals should be absolutely free from molestation by man. In 1893, in the club's first volume, it was urged that the government should establish large game refuges in forest reserves where now hunting is still permitted under state laws. Bills have more than once been introduced in Congress, authorizing the President, with the approval of the governors of the states in which the reserves are situated, to set aside areas in the forest reserves as big-game refuges where stringent protection should be given. Congress has not as yet seen fit to act on any of these bills.

Within the past few years great strides have been made in different states in the way of establishing game refuges and state preserves where the wild animals shall be safe. The well-under-

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stood purpose of these refuges is to give the game the opportunity to live and breed unmolested, so that it may there increase and distribute itself over the neighboring territory.

California has established twenty-eight game refuges and three game preserves. The most recent report from Minnesota shows that it has thirty-seven game refuges; while the report of the Pennsylvania Game Commission shows that within the state there are thirty-two regular and eight supplementary game refuges. In each of these states the results have been highly satisfactory, and the increase in the amount of game found in the neighborhood of the refuges has been great and has more than justified the setting aside of the land. As time goes on, more work is certain to be done in these directions, and with results that cannot fail to be gratifying.

The continuing expansion all over the United States of the outdoor sentiment and the constant additions to the ranks of those interested in wild life protection is resulting in a steady increase in small, as well as in large, parks, refuges and preserves. One now in contemplation is in the sand-dune country in Indiana, a region of sand hills extending for fifteen miles along the shores of

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Lake Michigan. This tract, for the most part useless for agriculture, shelters many unusual wild animals and plants which should be preserved. It offers great possibilities for a large and attractive park.

In Iowa efforts are being made to establish a system of state parks and lake improvement, and the legislature and citizens are agreed that this should be done. Citizens have given land for the purpose and the state has given money.

Wild life preservation has interested not a few persons of means, and some magnificent gifts have been made in its behalf. Two of the largest were the donation by the late Mrs. Russell Sage of Marsh Island and that by the Rockefeller Foundation of the Grand Chenier Tract. Both tracts are in Louisiana on the borders of the Gulf of Mexico, and both were bought to serve as refuges where all birds should be protected from molestation. Each has an area of about eighty thousand acres and is now the protected winter home of great hordes of wild fowl that in autumn migrate from the North. Besides such notable gifts, persons all over the United States are continually presenting to their state, their county or their town, tracts of land, large or small, for parks or preserves on which wild life shall be protected and fostered.

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GAME INCREASE

The interest felt in wild life protection has expressed itself in the establishment all over the country of a great number of national, state and local game protective clubs and associations, which in the aggregate are rendering invaluable service. Noteworthy among these is the American Game Protective and Propagation Association, established by business men on a solid business basis and conducted on business lines. It is performing great, substantial and permanent work.

Many states have established game farms on which experiments in the breeding of game birds are constantly being made, and to carry on these game farms considerable appropriations are made by the legislatures. Exotic species—chiefly forms of Asiatic pheasants—have been introduced and much success has been had in propagating them. As yet, attempts to rear our native game in quantity have been successful only in the case of ducks, but general success is quite sure to come.

It was earlier pointed out that to be efficient—to secure the support of the public—game laws should be based on economic rather than on sentimental reasons. Game protection in the United States is gradually working around to that view,—which has long been that of the game laws in

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Britain and of the hunting laws established by the Indians,—so that today, in constantly growing measure, our laws embody sound economic principles.

The natural things we are trying to preserve are useful in two aspects. They have a value measurable in money, and a recreation value, not measurable, but expressing itself in renewed vitality in working people, and so indirectly adding to our national well-being. If we treat these natural things solely as commercial assets and turn them into dollars and cents, we expend and destroy them. Their use is ended. They leave nothing behind them. If we preserve them, they reproduce themselves, retain their value for recreation, and will yield to us and to our children a never ending income in health, strength and pleasure. Preserved, they are everlasting; consumed and destroyed, their value is gone for all time.

By preserving these things of nature and of beauty, people are induced to spend more time out of doors and in natural surroundings. They place themselves, for a while, in an environment sharply changed from that to which they are accustomed, and this alters the current of their thoughts. The changed thought brings with it rest, relaxation and a temporarily altered viewpoint; their bodies and

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brains are refreshed, and they return to their accustomed places better equipped to carry on their daily tasks, to work more effectively and to contribute more to their own well-being and to that of their fellow men.

Though little considered by many people, the economic value of recreation is at last coming to be understood, and the feeling about it is growing and spreading. Convincing proof of this growth and of its strength is found in a list recently compiled by the Biological Survey, which shows that in recent years more than twenty millions of acres of land have been set aside as state game and bird refuges by the different states of the Union. Only thirteen states are without such refuges; while Wyoming has more than four million acres so reserved, and other states have very large tracts. That legislatures have provided these great areas for such a purpose clearly shows the state of popular feeling, for legislators usually express the wishes of their constituents. The legislatures of about forty states have recognized the importance of protection by enacting laws to establish conservation or game commissions, boards or departments for the protection of the natural objects which the thoughtless greed of men would other-

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wise destroy. The few states which lack game commissions have game wardens.

Three important federal bureaus have been established to deal with different phases of this matter, and are giving thought, time and energy to caring for and preserving those natural things which render outdoor life attractive to the public. This may be called the administrative side of protection and the work is constantly growing in importance and value.

All this official work is no more than an indication of the sentiment existing throughout the country, which these bureaus recognize and which they try to assist, direct and lead.

The National Park Service has charge of national parks and monuments, and has labored untiringly to aid the public in its enjoyment of these so-called play-spots. Its work is often difficult and puzzling, for as the parks become better known and greater crowds rush to them, new problems are continually encountered which must be solved with the least possible inconvenience to the public.

Only a few years ago, the United States Forester set on foot the plan of using the forest reserves not merely as places where timber crops should be protected, planted, grown and harvested,

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but also as recreation grounds where, under reasonable restrictions, people might go to camp, to live out of doors and to enjoy the more or less untouched wilderness.

Finally the Biological Survey is constantly engaged in the work of game protection, and is today the most active and most potent force in the country in behalf of the preservation of the useful forms of wild life.

The chiefs of these three bureaus are working whole-heartedly, sympathetically, energetically and together for the common object—that is, to protect and to make available to the people, so far as is practical, the natural things which they can control.

The work of these bureaus is of enormous advantage to the growing public that loves nature and the out of doors. With money appropriations, with representatives scattered all over the country, with facilities for acquiring information on a thousand subjects, these bureaus can and do gather facts on a multitude of matters bearing on nature protection, and are thus of great service to individuals and groups that are local and cover only limited areas. Such individuals and associations, and the game protective organizations of the various states, constantly appeal to these bureaus

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for information, lean on them and ask their help in carrying through projects of local interest.

All this has come about in little more than a generation. As already suggested, its beginning was set on foot many years ago by people who, while they had a general idea of the results they hoped for, did not then know how these results were to be attained, and had no slightest conception of the final outcome of their efforts. Their confidence that they were right and their faith in the good sense of the American people were their only support. They worked along from day to day, blindly and gropingly; but all the time they were learning, and the call they sounded appealed to many people. Gradually the work was taken up by thousands upon thousands of earnest men and women, many of whom came to have a splendid enthusiasm for a cause whose meaning little by little became more and more clear. Converts were made and young people grew up who became devoted to some phase of protection. Of these, not a few possessed energy and brains, and forged to the front and often bore the burden of the battle.

Since in most states there exists a strong feeling in behalf of wild life protection, since the chiefs of three important government bureaus appreciate the importance of recreation and of the pro-

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tection of natural things, and since also scattered throughout the country are many associations and individuals devoted to such protection and actively watching Congress so as to forestall the frequent commercial attacks on our national parks, our national forests and our wild life, we see already the dawning of a day when, in suitable situations, the forests, the birds and the animals so ruthlessly swept away in the past may be in a measure re-established and, within proper limits, may be preserved for the benefit of future generations.

Geo. Bird Grinnell.

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The completion of the Uganda Railway has so greatly altered the complexion of that vast territory between Mombasa and Lake Nyanza that a description of the native fauna as it existed before that time seems worth setting down. Farther north, in Abyssinia, the change has been no less rapid, though there it was only partially caused by the construction of the French line from Jibuti to Diridawa—Menelik having withdrawn his permission for the further extension of the line to his capital, Adis Abeba. Some years after the death of the great Emperor, however, the railway was completed.

In 1899, when I decided on an expedition to this part of Africa, the incentive was largely elephant shooting; though the mysterious kingdom of Prester John had long had an irresistible attraction for me. "The Land where the mountains were all pure gold and the children played at marbles with large diamonds."

Its historied records are very scanty. The con-

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version of the inhabitants to Christianity was first attempted about 327 A.D., when Athanasius, the patriarch of Alexandria, appointed Frumentius bishop of Axum. About 1486 John II of Portugal sent de Payva to explore Abyssinia, and he was murdered. Later, Christopher de Gama is reported to have stormed the famous Jew's Rock of Amba Gideon, about one hundred and fifty miles from Massowah, but this conquest neither proceeded far nor was very successful. In 1520 an expedition attempted to make its way into the interior for the purpose of converting the inhabitants to Roman Catholicism, Francisco Alvarez, a friar, accompanying it for that purpose; here again with little success.

The crushing and final defeat of the Italians at Adowa on March 1, 1896, was an event having far-reaching effects, for it was the first victory by a non-European force over an army led by and largely composed of white men.

The Italians under General Baratieri numbered between 17,000 and 18,000 men, of whom at least 10,000 were Italian, the rest being native auxiliaries. The Emperor Menelik's huge force approximated 125,000 infantry—80,000 or 85,000 of whom were armed with the French Gras and

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the rest with other rifles, some Lebel and Remingtons—and 10,000 or 12,000 cavalry.

The disaster was complete. The Italians lost between 7,000 and 8,000 men in killed and wounded, besides many prisoners. The native prisoners were condemned to the loss of a hand and a foot, which resulted in the death of many more. In spite of the efforts of Menelik, many of the white prisoners were treated with great cruelty. No attempt to retrieve this disaster was made by the Italians.

The country around Lake Rudolph, little known and practically untouched since its discovery by Count Teleki in 1887, held out more inducement to an elephant hunter than any other part of Africa. A. H. Neumann and Dr. Donaldson Smith, who had visited it in the interval, though by different routes from that which I intended to pursue, confirmed the reports from native sources, of the size, number and bad temper of the elephants to be met with there, and two expeditions and something over two years' time spent in this part of Africa have led me to the same conclusions.

The great distances to be covered and the hostility of some of the natives in the region to be traversed, no matter which route might be chosen, as well as the entire absence of knowledge con-

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cerning water, gave by its many hazards an added attraction to this great and mysterious inland sea, Lake Rudolph,—reported populated on its western shore by a race of giants, called Turkana.

The elaborate preparations and the many details necessary in those days I shall not attempt to go into—that time has passed. In these days it is necessary only to make your original arrangements with some firm at Nairobi (or in London), get off the comfortably appointed cars at the station selected, after a most interesting run up from the coast, and be met by a white hunter or hunters, depending on the size of your party, who manages your *safari*, and has already arranged for your supplies and the porters to carry them. You then visit the different game areas under his guidance, shooting what your license allows. The system of licenses and game reserves came none too soon, as the ease of travel soon brought to this game paradise countless sportsmen—some with wives and children.

In the days I am writing of, however, the entire country was largely unexplored and there was no government interference. After once leaving the coast, every white man was a law unto himself, his power depending only on the strength of his caravan. The number and variety of species of

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game has never been surpassed, if equaled, in any other part of Africa, at least during the life of any of the older living hunters of our time. Capt. F. C. Selous, whose knowledge of conditions in our day was probably unequaled, held this belief.

The autumn of 1899 saw our arrival at Aden. Stores of every description necessary for a year's time had been ordered and packed at the Army and Navy stores in London. They were in cases suitable for camel transport, each box weighing somewhat over one hundred pounds. Some smaller cases were for mule or donkey transport. Ammunition was in boxes soldered up to prevent deterioration.

My battery was a double-barreled 10-bore rifle using black powder, weighing about fifteen pounds and sighted to fifty and one hundred yards, a double-barreled .450 black powder Henry and a .30-40 Winchester, a 12-bore Holland & Holland hammerless for guinea fowl and other birds, and a .38 Colt and Mauser automatic pistol. We also had with us, rather as an experiment, a .450 Cordite rifle by Rigby. This was the first I had seen of high-powered rifles of this size. It proved effective beyond our hopes and after our return to the coast I had Holland & Holland build me a .450/500 Cordite which I substituted with great advantage

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for the 10-bore, whose weight, recoil, short range and dense smoke made it far less comfortable to use than the newer weapon. A .360 double-barreled Cordite built for me by Frazer of Edinburgh replaced the black powder Henry, and I also added a .256 Mannlicher to supplement my Winchester. I had Lyman sights on all rifles and I attribute much of my success, especially at long ranges, to this device.

The camels, sixty in number, had all been purchased through my agents, Cowasjee Dinshaw & Co., at Aden and were waiting for us at Zeyla, on the Somali Coast.

The Mad Mullah, Mohammed Abdullahi, at this time was carrying on rather successful military operations over a large part of Somaliland, but by using Zeyla as a starting point instead of Bulhar or Berbera, we reduced to a minimum our chance of being overhauled by him. However, we obtained Snider rifles and ammunition from the Aden arsenal to arm our Somali retainers.

Having chartered the little steamer *Woodcock* at Aden, we left there in the evening and arrived the next morning off Zeyla and landed in native boats. Captain Harrington, now Colonel Sir John, who had been appointed British Resident at Adis Abeba, was there preparing to make a start for

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his post in a few days. We accepted his kind invitation to live in his compound on our arrival at the Abyssinian capital.

We were able to rent the old residency, built during the Egyptian occupation, and several days were spent here weighing, sorting and repacking some of the loads, engaging extra camel men and purchasing riding ponies. The listing and marking of all packages to show whether they contained articles for daily camp use, or beads, bars of iron and brass, coils of wire and other trade goods together with rolls of Amerikani,—a coarse white cotton fabric much prized by all native peoples,—seemed an endless operation. At last everything was completed; our men were marched to the vice consul's office and names and tribes registered, together with the amount of their pay agreed on and the sum already advanced. Captain Harrington was staying with Lieutenant Harold, the vice consul, at the new residency, a two-storied stone structure with wide verandas on both floors, with a small garrison of Soudanese. All natives were obliged on entering the town of Zeyla to leave their spears and other arms at a guardhouse, where they could reclaim them on their departure. This was to prevent quarreling in the streets.

The weather had been clear and hot with a few



PELZELN'S GAZELLE



LESSER KOODOO

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showers at night and the afternoon we left proved no exception. At four o'clock, after an infinite number of delays, the long caravan started. The camels grumbled and complained more than usual at being loaded after their long holiday. We used no wooden saddles as the Esa do, but only the heavy camel mats fastened with fiber ropes, for which in many cases we later substituted hide reims. After a short march across a sandy, wind-swept plain with scanty vegetation, we reached Warabod and camped for the night.

Here I decided that we needed more camels. One had already been killed by a snake while feeding near Zeyla and many were loaded more heavily than I cared to see at the start of a long expedition. So I sent the headman, Mahomet Hassan, back to purchase fifteen, load them with rice and follow us. Mahomet had been headman for Captain Wellby the previous year on his expedition through Abyssinia to the Sobat River and no praise too high can be given to his loyalty, courage and ability. The next day on the march I saw a small herd of Pelzeln gazelle (*G. pelzelni*) and was fortunate enough to bag a male and a female, both with very fine horns; I have met with them only in this locality. Aoul (*G. soemmeringi*) were plentiful. I also shot a wart hog which the Somalis

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would not touch and I was obliged to skin it without assistance; there were some dik dik, and the ubiquitous jackal was much in evidence, especially at night around the camp. The heat being excessive, we marched at night by the moon or very early in the morning, in order to favor the camels as much as possible. This also gave them the day to graze and allowed us more time for shooting.

At Hensa, about thirty miles from the coast, we first encountered hyena, but failed to bag any. We had been steadily rising to an elevation of now about 2,000 feet, our road leading through rocky gorges among peaks with flat tops. This made the nights cold but during the day the heat was extreme. Here two of the camels, becoming exhausted, were shot and one was eaten by the boys, whose regular ration is rice and ghee. To them camel and sheep were a great luxury. They are very particular about eating game, unless the halal has been correctly performed; that is, the head of the wounded animal turned toward Mecca and his throat cut while a few words of Arabic prayer are muttered. The Abyssinians also halal their meat, but neither race recognizes the rite when performed by the other.

Beyond Lasman I shot a fine lesser koodoo bull and also a splendid specimen of the gerenuk, or



SOEMMERING'S GAZELLE



ORYX

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Waller's gazelle (*Lithocranius Walleri*). They are exceedingly graceful in spite of their giraffe-like neck and very long and slender legs, which are most useful, as in feeding they often stand erect, reaching the leaves in the lower boughs of mimosa and other trees

On the high mountains to the south of our camp at Arroweina, which was near a small Abyssinian fort, with water of a fair quality and some trees, after a very hard day, I finally got up to a group of beira. They were four in number, one buck and three does. A laborious and very careful stalk brought me finally to within about one hundred and twenty-five yards. The buck fell at the first shot and the largest doe at the second, but it took two more cartridges from my Winchester .30-40 to drop the buck finally, as he made his way off amongst the craggy rocks. They were very shy, and their habits and the country they lived in reminded me much of the chamois. They are very local in their distribution; I have never found them except in this locality.

The following two days were unpleasant—no water and a high wind which blew the sand about dreadfully, but we saw both ostriches and oryx. They were very timid and all stalks were unsuccessful. A fox which ran across our line of march,

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I rolled over at one hundred and sixty yards, to the great delight of my two shikaris.

In country where no heavy game was expected, my head shikari always followed me with the Winchester and the second with the .450 Henry, a light and handy rifle for its caliber. The large bore rifles were carried on the camels.

We now passed through what our gun-bearers called the Devil-country. It was rocky, barren and forbidding in appearance, with many small volcanic craters, which showed signs of having been in eruption. They implored us not to shoot, or the devils would hurl rocks and roar at us, which request we respected, as we saw absolutely no game, and the next day arrived at Gildessa, a straggling Abyssinian village of mud huts with perhaps five hundred inhabitants. We camped in a fair grove of trees, and then received the visit of the Shum. He brought us two goats and a lot of fodder for our animals, sat and drank brandy from our medicine chest, admired a picture of Menelik we showed him, which he looked at standing, and finally allowed himself to be photographed before leaving, after we had promised to return his call. This we did the following day, presenting him with a gun-metal watch. He was disgraced shortly

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after this for having killed some of Harrington's hired camel men.

Here I determined to leave the caravan and, with some mules I had purchased, to make a side trip to Harar to see Ras Makonnen, the famous ruler of that city, second only to Menelik in power and influence in Abyssinia.

At three in the afternoon we left Gildessa, the trail winding up a river bed in a deep gorge with small irrigation ditches conveying water along the different levels and emptying it into the fields of Indian corn which were terraced up on either side of this gorge. There were many small villages clustered about, but in spite of this, two or three troops of large baboons watched our passage without fear. At 7:30 we camped in the gorge near a small cemetery. It was very cold and damp and little fuel was to be found. I managed to shoot some ring doves, which were delicious eating.

The following day we pushed on through Balawa, a lovely place high in the mountains with running water and trees, a great number of cattle grazing and the ground everywhere terraced for cultivation, the ploughs being drawn by oxen. Here we rode across an open plain, surrounded by mountains. Cattle, ponies, mules and people were everywhere; the small boys were throwing spears at

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hoops which they rolled on the ground and frequently hit.

The last part of the road winds through high hedges of cactus and finally, at 5:30, we reached the gates of Harar. They are shut at six. Here I found Garasmatch Banti acting as governor of the city, Makonnen having been summoned to Adis. He was awaiting me in an unfurnished room in the second story of his house. Chairs were then brought in, and much hydromel consumed, while, through his French interpreter, he related his exploits at the Abyssinian victory of Jiggiga, in which he had defeated the Mullah, killing 1,650 of his Somali warriors. The Abyssinians were co-operating in a half-hearted way with the small British expeditionary forces in Somaliland; though they never ventured far from their mountains, dreading the sand and lack of water of the desert. For this reason they were called sheep by the Somalis and were looked upon with disdain. A few English officers were assigned to Menelik's forces but they found it difficult to obtain that exact interpretation of orders so necessary to the success of any combined military operation.

One of Banti's aides then escorted us to our camp outside the city gates, and later many presents arrived.

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Having made some purchases in the town I visited the French mission and had an interesting conversation with the Fathers. Still no reply by telegraph from Harrington at Adis, to my request for permission to proceed by way of the forest route of Herrer, through the Danakil country.

The great city of Harar is surrounded by a brown stone and rubble wall with gates; the Gildessa gate is painted white. Ras Makonnen's residence, built by East Indians, is large, square and painted white, separated from the public square by a gate surmounted by two white wooden lions and a large courtyard. In the square there is a round Abyssinian church, also painted white, with a few pictures of lions in the interior. Some minarets are still visible in the city, reminders of the days before the Abyssinians conquered the town and abolished Egyptian control. The inhabitants of Harar have also a language of their own.

The following day I started back for Gildessa. On the road I met a small snake about four feet long with one of the large frogs of this part of the country half-way down its throat. My mule stood while I put two bullets through it with my Colt. It then disgorged the frog without much difficulty, when I finished the reptile with a shot through its

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head. The frog seemed unhurt and soon disappeared.

Arriving at Gildessa, Mahomet not having turned up with the extra camels, we determined to push on, taking the northern trail through the Danakil country. It is not the caravan route from the coast, so there is plenty of game and even elephants were spoken of. Permission arriving from Adis Abeba, we broke camp by moonlight the next morning and wound our way upward through a wooded country of small hills, and brooks which were full of water running down rapids and over miniature waterfalls into picturesque little pools. After making camp, while out shooting in the afternoon on the banks of a small stream in fairly thick jungle, near Gurgura, I caught sight of a lesser koodoo bull standing in a small clearing. He carried fine horns, so I fired and wounded him. We found some blood at first and then failed entirely to follow his spoor: the phenomenal tracking powers so often heard of among other natives, I have never found amongst either Somalis or Abyssinians.

After working on his trail unsuccessfully for a short time, a hyena suddenly appeared at some distance, slowly scenting his way, fortunately up wind from us. I followed him very carefully for a



LESSER KOODOO



AARDVARK

To Lake Rudolph and Beyond

few minutes until he led me up to my wounded koodoo. I knocked the koodoo down and turned hastily for the hyena, but he had disappeared. I regretted losing him, as I have seldom seen them hunting by daylight.

The following day in mountainous country I saw the fresh spoor of a leopard, but could not track him far, owing to the rocky ground. Later, a lucky shot killed a klipspringer, one of the most interesting of small antelopes for the curious construction of their hoofs and a bristly quill-like hide. He fell a considerable distance and unfortunately broke the tip of one of his horns.

We camped here at an altitude of 4,000 feet. There was considerable old elephant spoor about, and one of my companions shot an antbear. A party of Haweya warriors came to camp and for the small sum of five Maria Theresa dollars gave us a really fine exhibition of their war dances.

Some natives we passed on the march were having a burying party, which is an occasion for a feast. A camel and two cows had been killed and near at hand vultures and a fox were quarreling over the refuse. We set our dogs, a mixed pack of lurchers, on the fox, which gave us a good burst for a few minutes until we lost him in the thorn scrub. Our dogs could not stand the climate and

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were troubled constantly with sore feet, which necessitated their being carried on the march. We presented them to Harrington at Adis Abeba where, in spite of the healthy climate and all the care his doctor lavished on them, they died off one by one. They required an Abyssinian attendant, as the Somalis would not touch them under any consideration. The following day I saw a lynx at which I failed to get a shot, and some female bush buck which I left unmolested.

One camp on the Hawash River was especially beautiful, near the clear flowing stream, with magnificent trees and bamboo thickets. I have used the same place twice. It is near the village of Tumbaco, the chief of the Danakils or Oderali. His power has finally been crushed, but my first experience with him was most disagreeable. We had camped near the stream and constructed a good zeriba—the necessary thorn being plentiful—when the great Tumbaco appeared with a large following. He was a filthy old man clothed only in a dirty tobe and continually chewing tobacco mixed with wood ash which he held within his lower lip. He immediately commenced asking questions as to what we wanted in his country, where we were going and what race we belonged to. He said he had never heard of the British, but realized from



HAWEYA WARRIORS DANCING



JUDGE OF THE MARKET PLACE

To Lake Rudolph and Beyond

the size of our caravan and the equipment that we must be strangers of some importance. After drinking some coffee he got up to leave, saying he would wait for us to unpack our loads before he obtained his present. In the meantime we must give him two silk robes for some friends of his to impress them with our riches. We compromised on some calico.

After his departure I went along the river bank and sighted a lesser koodoo. As we needed meat, and he also carried a good head, I made a careful stalk. When within range some mounted natives galloped up and of course the koodoo disappeared. It was not very satisfactory to have them inform me insolently that they had done it on purpose. They are great hunters and ride down their game. I promptly returned to camp, as I feared trouble. The rest of the day and night passed quietly, double sentries being posted and fires kept burning. Early the following morning we broke camp and marched to Gurto, a spot within about a mile of the chief's village. A large collection of mud and straw huts was surrounded by the usual thorn fence and filled with children, dogs and flocks of sheep and goats. Here, on a bare hilltop overlooking the river, we constructed a very strong zeriba.

Soon Tumbaco appeared with a large armed

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retinue, more and more entering our zeriba and becoming each minute more insolent to our men, asking for soap and then, the crowning insult, asking our men to wash their filthy clothes for them. The Somalis, armed and grouped in their four companies, were ready for trouble, which appeared imminent, when a hasty suggestion to Tumbaco that we were preparing a feast of rice and ghee for his personal benefit and that of his immediate friends, enlisted his help in clearing the zeriba of his unruly followers.

After the banquet the question of presents was discussed; his, four mangy goats; ours, after much haggling, some Maria Theresa dollars, three rolls of Amerikani and tobacco; last but not least some quinine pills wrapped in silver foil, to ensure him a son by his favorite wife, this after a long and confidential palaver. The night was a dark and consequently very anxious one, for in spite of our arms and thick zeriba we feared an attempt to rush us, as they gathered around the base of our little knoll, beating drums.

Toward morning things quieted down and at dawn as we were preparing to break camp the four goats were led in. Now ensued more conversation, coffee-drinking and tobacco-chewing, all to enable us to obtain permission to shoot in his territory,

To Lake Rudolph and Beyond

especially along the river. In early afternoon we were ready to start, but as the caravan wound down the slope, word was brought to me that the goats that were to have joined our little flock in the rear were being held by force. Galloping back I saw some natives around the goats. As I approached the largest Danakil raised his broad-headed spear and drew back his arm to strike. Instead, as my pony reached him he sprang behind a tree and in a moment some of my riflemen were with me. We led off the goats amidst the great laughter of our men and the complete chagrin of the Oderali. But all meetings with Tumbaco did not end thus happily. A French caravan attacked a short time before, under similar circumstances, had lost a number killed, including, unfortunately, one French officer.

That night we camped at Toluk near a large Abyssinian force that had been on some mission to our friend and was now returning to Adis Abeba. The next camp was at the base of an extraordinary rocky hill, rising 1,000 feet from the otherwise level plain called Frugdeha. I was well repaid for the laborious climb by the opportunity which the view gave me of mapping the country. That night Mahomet rejoined us with the camels which he had bought at Bulhar,—a fine-

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looking lot. Tumbaco had let him pass without interference. From here, after a long, hot, dusty march, we made a camp on Lake Ordah, a beautiful sheet of water covered with ducks, which proved excellent eating. I had also shot two aoul on the march so the men had meat.

The natives, riding ponies, came down in the evening to water their herds of cattle, and one reported elephant a short way off. An early start the following morning with three camels for light equipment and to bring back the ivory, brought us, after a hard trek of about twelve miles, to the spoor, over a week old. These disappointments are always to be expected, even when they declare they have actually seen the animals themselves and go into eulogies over the size of their ivory, as their intention seems to be to please the stranger at any sacrifice of veracity. I bagged a fine oryx, however, after a long stalk, and one of my companions killed a Grevy zebra.

Several very hot and tedious marches, on which we were obliged to carry water, brought us to Bilen hot springs, a swamp with buffalo, water buck, lion and elephant tracks all about. We camped here four days. The first night I spent on the edge of the swamp in a lion zeriba which the Somalis constructed, a small circular heap of



GREVY'S ZEBRA



COW ELAND

To Lake Rudolph and Beyond

thorns, into which one crawled and then pulled thorns back into the entrance, using a donkey as bait. There was no sign of lions and I was simply devoured by mosquitoes. Before dawn, leaving the zeriba and skirting the edge of the swamp looking for buffalo, I came across two water buck feeding, and made a right and left with the .30-40 Winchester, killing both before they could regain the swamp; bulls with rather fine heads.

That night late I started to stalk the buffalo by moonlight in the swamp. Suddenly, about 2 a.m., the light began to fail just when I was close up to a band of four or five feeding near the edge. It was a total eclipse of the moon. My situation was disagreeable, as buffalo-shooting, even by daylight, has its risks. I sighted as well as possible a new rifle I had brought with me as an experiment—a .400 Cordite, magazine, by Cogswell & Harrison. A click was the response to the pressure on the trigger. Ejecting the unexploded cartridge, the same thing was repeated. The buffalo looked my way as I reached back for the Winchester, and then plunged into the swamp, much to my relief, as a .30-40 is hardly the weapon for oncoming buffalo at night. Returning to camp I found the Somalis doing some praying, but after all not much perturbed by the eclipse.

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The two following days carefully organized drives for the buffalo failed utterly,—one animal passed close to my position in the reeds, but even at that distance, three or four yards, I could see nothing of him. Of course a shot would have been madness, as the bullet must be placed with deadly accuracy at such close quarters to avoid a probably fatal accident.

During that night the dogs made a tremendous uproar; as I came out of my tent I saw "Nell," a large gray lurcher, disappearing over a low part of the zeriba in a lion's mouth. No chance for a shot. As soon as there was light enough we went after her, but though at first there was plenty of spoor and a little blood, in the thicker brush we lost the trail entirely. We never saw any further traces of the lion or its prey. One of the sentries reported that he had seen the lion leap the thorn hedge, landing near Nell. He killed her with a blow of his paw, and instantly leaped out again. It was a sad ending, though she was one of the poorest of our pack and had required continual nursing since leaving the coast.

Two more days brought the caravan to the Hawash River, where we first met elephant. They were in a stretch of thick jungle near the river.



AFRICAN HUNTING DOG



COW ELEPHANT AND CALF

To Lake Rudolph and Beyond

The day was hot with very little breeze; most of the herd were resting, some lazily feeding.

Carrying my 10-bore, I was followed by Karscho Aden with the .450 Henry as second gun. Karscho was a man of great reputation in Somali-land. Some time before, he had been with William Astor Chanler in East Africa, and later had served a short time, with credit, with the British in the Somali war. We pushed our way carefully into the brush, crawling when necessary to ensure progress as noiseless as possible, and almost at once we appeared to be in the very midst of the elephants. There were many cows and calves (carefully to be avoided) and the glimpse I had of one or two bulls through the tangled network of branches showed they were carrying very poor ivory. This I had been led to expect, as the Somalis always stated that the Abyssinian elephants were smaller than those in other sections, both in teeth and actual bulk. Finally, reluctant to shoot and moving forward continually in the hope of something bigger, a cow to our left front turned and started to walk slowly toward us. Hoping she would not notice us we remained motionless until her near approach, about ten or twelve yards, made some action necessary. Then I fired at her head with the 10-bore, she staggered and swinging across our

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front gave me the chance for a heart shot with the left barrel. She continued her rush for another twenty yards, then collapsed and rolled over on her side. I had changed rifles and at very short range fired both barrels of the .450 into her head as she made efforts to get up. The jungle was now alive with trumpeting and crashings of branches as the elephants broke their way in all directions. A large-bodied bull met me on one of the narrow tracks through the thorny underbrush. There was just time to notice his small ivory as he screamed and charged. Both barrels of the 10-bore at a few yards' range caused him to swerve slightly and pass me under cover of the dense smoke. A hasty shot from the .450 striking far back raked forward through his lungs and he went straight on for only a short distance. Following slowly I came up to him standing almost broadside across the path. As he started to swing toward me a shot in his left temple dropped him. As it was growing late and the herd was widely scattered, we cut off the two tails and returned to camp. The next day was spent in removing the ivory and the bull's head skin.

The following morning we crossed the river in my Berthon folding boat. It was about forty yards broad, with high sandy banks crowned by fine



HIPPO ON HAWASH RIVER

To Lake Rudolph and Beyond

shade trees. There were many hippos in the river, and I shot two for meat and their teeth. They expose so little when in the water that it requires an accurate shot to reach the brain. They sink and do not float again for a considerable time, generally a day or so. We were lucky in landing these, which we found on sandbars, having drifted downstream into a backwater near the bank. There were crocodiles in the stream, which rendered the caravan's crossing difficult and dangerous. I found a position on the bank below the point chosen as a ford the best, as the crocs generally ascended the river and rose to take a look before making an attack, which gave time for a shot, which, even if not a fatal one, was sufficient to deter them from their purpose.

A large party of Galla elephant hunters came up with us here, all mounted and armed with spears and knives with the tail of some animal or occasionally a piece of lion's mane fastened around their ponies' necks. They were fine-looking men and became very friendly. They said they had never seen white men before and were much interested in our clothes, boots and rifles. Their surprise was greatest when we informed them we were white all over and had toes like theirs under our boots.

Some fresh lion tracks caused us to build zeribas

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and spend the night out. But we were devoured by mosquitoes and had no luck. A hippo came close to me in the night, feeding, but I left him unmolested, and later a lion came within six feet of the rear of my little zeriba, but after sniffing about for a few minutes he moved away and I got no shot. The natives having hunted over this country a good deal, we determined to push on to Tadechamalca, make a strong permanent camp there, leave all camels, as feed was reported good, and make a side trip up to Adis Abeba to visit Harrington and have an interview with the Emperor Menelik.

We spent Christmas camped on the banks of the river Cubanoar, a swift stream running into the Hawash. I had fortunately shot two aoul and a dik dik, so our Christmas dinner was not entirely without meat. We opened a bottle of champagne and drank it mixed with sparkling water, which we manufactured ourselves with the invaluable "sparklets."

Two spotted hyenas were around the camp and I determined to make an attempt that night to bag the pair and thereby disprove the belief held by the natives that these hyenas were of both sexes and in mating could fulfill either function. Fastening a goat in an open spot before my tent. I waited

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for several hours. At last they came out from the bush and in spite of the poor light gave me a fair chance at close range. One fell instantly; the other, though hit, made off in the night. At dawn we found the male dead a few yards away. His mate had left a blood spoor which we followed rapidly, soon arriving at the entrance of a cave-like burrow in a small sandy hillside.

The hyena, a few yards within the burrow, saw us as quickly as we discerned her and strangely enough came out with a rush; it took two shots to stop and kill her, without damaging the skull.

I was anxious to bring back the pair to be mounted as a group for the American Museum of Natural History, where they now are; a very perfect and artistic piece of work. Natives had often assured me that they would attack women and children; at night even venturing into the doorway of a hut to seize their prey; but to actually make a rush in broad daylight I think can only be accounted for by the fact that she probably had some young farther back in her den. It was too small to crawl into more than a short way and I was unable to determine whether the incentive of protecting her family gave her this very unusual courage.

Having established our permanent camp at Tadechamalca, on December 28 we left for our

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side trip to the capital. A march from 7 a.m. to 12:30 brought us to Chobe, a small village high up among the rocks on the telephone line to Adis Abeba. Up at 2:15 the following morning we reached Balchi after a long march, climbing up a long gorge on to the great plateau which extends from here to the capital. A governor resides here and there is another telephone station. It is a typical rambling Abyssinian village of the usual circular tukls, or huts, bordering a lane or track of varying width but always deep in filth. The nine hours' march had quite done up our animals and the start the next morning was a slow and difficult proceeding. We had hired a few mules to carry our light personal baggage and eventually got them loaded and pushed through to Shankora. The nights here on the plateau were bitterly cold and we suffered from having brought no tents, and the frequent rains kept us soaked to the skin. The native food was most unpalatable, principally honey of a strong flavor and almost solid with dead bees and red pepper; and "injerra," the thin, flat, sour unleavened bread, about eighteen inches in diameter and the thickness of a pancake. A very few eggs and some scrawny chickens were purchased with difficulty.

On this day, December 31, we met a Russian

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with his Abyssinian wife, an officer of the Imperial Guard; he was returning to Russia by way of Jibouti; he spoke French and informed us that M. Ilg, the Swiss adviser to the Emperor, was a short way behind him with his wife, her sister and his brother-in-law, M. Gattiker. Upon their arrival we received news which eventually modified all our plans. A Count Leontieff, a Russian, had obtained permission from Menelik to hunt elephant around Rudolph. He had started with an escort of 1,500 Abyssinian soldiers but had found the country starving, owing to the drought of the preceding two years, had fought with the Gallas murdering and looting on all sides, but eventually had been routed and fled across to the Nile, some few of his men straggling back to their Abyssinian highlands.

My original plan of cutting across to the Nile from Lake Rudolph and thus home now seemed impossible, as the few remaining natives would be hostile, and the lack of water had always been the greatest difficulty. However, we could continue on down Lake Rudolph and strike south to Victoria Nyanza and from there down toward Mombasa, meeting the oncoming railroad, then in process of construction.

Late that night we camped at Roggie in a

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windy, stormy valley, very cold, and rainy. Off again at 7 a.m., we reached Adis Abeba at 12 on January 1, 1900. Situated in the center of a grassy, barren, wind-swept plain surrounded by hills, these clusters of huts, in small enclosures of all shapes and sizes, and numerous tented encampments looked far from imposing. On a small eminence dotted with trees, which in every other direction were conspicuous by their absence, stood the Gebi,—the palace of the all-powerful Menelik, King of Kings, conquering Lion of Judah, Emperor of Ethiopia, etc., composed of one rather large, white-washed building, surrounded by many smaller structures and all enclosed by a palisade.

The British Residency at that time was an enclosure of perhaps a dozen acres,—inside the mud wall with a few tukls or circular native huts in which lived Captain Harrington and Mr. Baird, his secretary, and two large tents, used as a drawing room and a dining room. We pitched our tents in a row at one end of his compound. The first night hyenas came over the wall and, before we could interfere, killed twelve of the twenty-five sheep we had purchased to ration our followers. Captain Ciccodicola, the Italian resident, invited us all to a dinner that night and his residence, the finest in Adis Abeba, was beautifully planned and

To Lake Rudolph and Beyond

furnished. Owing to the great shortage of timber, it was composed of the usual circular huts connected by passages around a courtyard where he had laid out really beautiful beds of flowers.

The dinner we sat down to was marvelous; the more to be appreciated by its great contrast to our meals for the last couple of months.

Scattered about in all directions and at great distances—two or three miles—are the Russian and French residencies; in other directions are the post office, customs house, telephone office and the market place, where the shops of the Greek and Indian merchants are situated. Farther on, Savouré, the largest French trader, had his residence and storehouses.

Menelik having returned, January 5 was set as the day for my audience. The intervening days we spent jackal hunting with varying success in the surrounding country, with some hounds sent as a present by Queen Victoria to the Emperor, and in playing polo on a piece of ground, regulation size, laid out by Harrington. We had some fine games, which were of intense interest to the Abyssinians, large crowds always gathering around the field. The sides were Harrington, Count Colley, an Italian, Lord Hindlip and myself, against four of

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the Indian sowars. A small number of these fine troopers composed the British Guard.

On Friday, January 5, soon after 3 p.m., we left the British Compound in dress suits, this being required by court etiquette, mounted on mules, with overcoats, as it was bitterly cold and raining as usual. Two Indian sowars in their magnificent uniforms preceded and two followed our party, composed of Harrington, Baird, Beru, the Abyssinian interpreter, Dr. Martin, a native educated in India, Powell-Cotton, Butter, Harrison and myself. At 4 p.m. we reached the Gebi, the trails being very muddy, and passing through three dirty outer courtyards, crowded with followers, we dismounted, left our coats with our servants and entered the August Presence.

The Emperor was reclining on pink satin cushions on a low dais at the end of a small room. He was dark and bearded, with an intelligent face, pitted by smallpox, a piece of white muslin drawn tightly around his head, a coat of striped yellow and green silk, the usual white trousers and over all, a cloak of black with heavy gold braid and a lining of pink, and a diamond earring in his left ear. We were introduced and shook hands. On being informed that I was an American, he evinced great interest, remarking: "You have come by far

To Lake Rudolph and Beyond

the farthest to see my country. I am glad at last to meet one of that race, about which I have heard much." After receiving permission for ourselves to strike for Lake Rudolph and for Powell-Cotton to go north after ibex, we shook hands and departed, first accepting an invitation for lunch the following Sunday. We had presented him with our ivory except two pairs retained by Butter and myself, and announced that we had brought him a rifle as a present, at which he expressed great gratification.

January 7 dawned cold and showery. Our invitation being for 10 a.m., we left soon after eight—as the Emperor is always exactly on time—clad in our dress suits. When approaching the Gebi we met the Emperor preceded by a bodyguard and surrounded by a large retinue coming our way. His Master of Ceremonies, after salutations, conducted us in front of a large tent where we all dismounted and stationed ourselves on the Emperor's left.

This being the second day of the Abyssinian Christmas, some religious ceremonies were gone through with. Priests and acolytes formed three sides of a square, the Emperor and ourselves forming the fourth side, together with the present Abouna or Archbishop and the previous one, an

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old man who had held the position under the Emperor John. Heavily embroidered red and gold umbrellas were held over them. First a dozen or more priests emerged from the tent with gold and silver mitres on their heads, chanting some religious psalm. They were all magnificently dressed in embroidered velvets and silks of every color of the rainbow, and with them were carried three large books, the Bible, Gospels and Psalms all covered in brocades of blue, green and gold. These were kissed by the Emperor and his two archbishops. Then a hymn was begun, all joining in the singing, and this was accompanied by a slow dance which is supposed to represent King David dancing before the Ark. Finally, at a sign from the Emperor, it all ceased, and reforming our procession we started for the gate of the Gebi.

Entering a large grass court, we took seats at the left of the Emperor, and the singing and dancing continued for another half hour. Then, after a blessing delivered in Arabic, we moved off to the Emperor's chapel—the soldiers and retainers being kept back by officials with sticks, frequently used—where the sacred books were deposited. Then we entered the Aderash, a large hall with a dais at one end, cut off by chintz curtains. Here we seated ourselves at two tables. The Emperor sat

To Lake Rudolph and Beyond

in the center on a throne with a red velvet canopy, the gift of the French Government, and the leading Rases and generals grouped themselves on either side. The banquet was lengthy and varied. There were many different kinds of cooked meats, all tasted by the leading woman cook before being served, to show that there was no danger of poison, and native drinks, tej and araki, as well as French claret and champagne.

Near the groups of officers stood attendants holding great pieces of fresh-killed raw beef from which the officers cut morsels with their swords or daggers. Then, placing the strip in the mouth, each cut off the remainder close up to the lips. When the Emperor drank, his retainers held their cloaks about him to shield him from the evil eye. Finally, the feast concluded, the curtains about our dais were drawn back and we found ourselves in a large hall about 170 by 90 feet in size, the walls covered with blue paper and gold stars and the roof supported by pillars of lattice-work, painted white and decorated with the national colors. These lattice pillars were rendered necessary by the shortage of large timber and the difficulties of transportation, everything being brought on mule back. Then the doors opened and about 5,000 guests, composed of officers, soldiers and priests,

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crowded in. They were the first of the three contingents of guests which followed one another. Forming in small groups of a dozen around a basket of the flat bread cakes, they were served with raw beef and tej in horn cups. An Abyssinian band played, finally ending with the national anthem. The Russian instructor had composed for them an Ethiopian national air, which was well played. After bidding farewell to the Emperor, we rode home. It was an amazing and interesting spectacle, and one long to be remembered. I respectfully declined to have an ear pierced, for a gold ring, the Abyssinian sign that you have killed an elephant.

Two days later, after final arrangements, and making a trip to Entotto, about two hours distant, on a hilltop, and with the usual round church, we started on the return to Tadechamalca. Our journey was much like that on the way up, though more comfortable, owing to the loan to us by Harrington of some small tents. Except for a night at Godaburka, where the hyenas nearly got some of the pack animals, it was uneventful.

From Tadechamalca I sent Jama Said, our second headman, back to the coast with trophies already collected. Careful packing of the skulls, horns and skins was required as it was doubtful

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how long they might be en route. My head shikari, Dimbil, a good hunter and useful man, went mad. We managed to secure him before any harm resulted and he went down to the coast also with Jama. There was no reason for his sudden breakdown. He had always been perfectly healthy and cheerful up to that time and was looked up to by the other shikaris as a man of wisdom and great experience. We sent back to Menelik a young oryx, but unfortunately it died before arrival at Adis Abeba. The ruined city of Alham, situated near here on a mountain top, well repaid a visit. The streets and ruined houses could still be traced, though the stones were all thickly covered with vegetation. Legend states that it was here that Mohammed Granya, a Danakil, defeated the Emperor Zaracob, about the year 1500, overrunning the country and eventually hiding the collected treasure on an island in Lake Zuai.

A few marches brought us again to the Hawash River. Some of the Somalis were down with fever so I decided to get a small antelope or some francolin for broth. Calling Darod Nur, now my head gun-bearer since Dimbil's madness, I carried the Mannlicher myself and gave him my shotgun. The country became more open as we left the thick growths along the banks of the river, and after a

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few miles the fresh spoor of a leopard led me toward an immense mass of scattered boulders.

The smooth sand between these great rocks bore the faint impression of his paws. As I moved carefully around a corner, a narrow cul de sac perhaps fifty yards long and half as wide, with high rocky sides, opened before me. Two gray mambas lay side by side in the center. They saw me as quickly as I saw them, and, raising their heads, came for me as rapidly as I have ever seen snakes travel. Mechanically and instantly I changed the rifle for the shotgun, Darod being directly behind, and fired one barrel at each. This slowed them up and gave me time hastily to reload. Another load of shot sufficed to stop them and then the finishing off was easy work. They measured 10 feet 9 inches and 9 feet 9 inches in length,—girth about 6 inches.

That evening there was much singing in the camp amongst the natives and discussion centered around the fact that I had a shotgun with me—a rare occurrence—and was trying to get guinea fowl for the sick (I did bring in a good bag of francolin) and therefore Allah was with me. I hate to surmise on the termination had I been without the gun. As to what species the snakes were, I am uncertain. Examination of their fangs

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proved that they were poisonous. I think they were either the *Naja najæ*, Linn. or *Naja nigricollis*, Reinh., as they answered exactly to the description of the mamba which had killed Colonel McDonald near the seacoast some time previously, only these were very much larger. The natives said that snakes were always vicious when encountered at that time, during the mating season. Both of these species have a very wide distribution over this section of Africa, and are known as highly poisonous and of very irascible and aggressive temperaments.

We camped near the base of the famous mountain, Zuquala, which mountain I did not climb until my second expedition to this part of the country. A description of the ascent may be interesting at this point. A two-hour very stiff climb with the sun blazing on our backs brought us to the rim of the crater and we saw the Abyssinian Lourdes below us.

About six hundred feet down lay a beautiful, small lake, nearly round and covered with ducks. On the bright green meadows which surrounded it, were grazing herds of cattle. Many Gallas were at work making mortar and commencing the construction of a new church—quite near the old one—of the circular type found everywhere in this

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country. Some large timbers about eight inches square were being planed; they also had a saw and some whetstones for sharpening their tools. Pretty thatched huts were scattered about in groves of banana trees; but most of them were deserted. The ring of small peaks which composed the rim of this crater varied in height from 600 feet to about 250 feet. The view from the summit was magnificent, for it overtopped all the surrounding mountainous country. Lake Zuai could be clearly seen to the south. A heavy thunderstorm which was gathering hastened our descent. I saw three klipspringers and many oribi, and bagged two oribi, one with a fine head measuring $4\frac{3}{4}$ inches, but failed to get a shot at the klipspringers.

The country from Mt. Zuqala south now became park-like, with very fine trees and large herds of hartebeeste, Grants, and many reedbuck. We had some exciting hunts, spearing hartebeeste from our ponies. The heavy spears, all blade and spike—on the butt end—except for a small shaft of wood in the center six or eight inches long for grasping with the hand, would shear through anything with little seeming effort. One hartebeeste, which gave me a grand gallop through the trees, caused me to lose my spear. I kept after him and riding up alongside fired two shots from my .38

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Colt into his neck without effect. It took a shot back of his ribs to bring him down, when I cut his throat. Both bullets in the neck were just under the skin in the heavy muscles. I have seen them actually embedded only in the skin of the shoulder of an oryx. Oryx hide is much prized by the natives for shields and is known to be tremendously thick and strong, but I had never credited that of the hartebeeste with especial toughness.

Vultures, maribou storks and other scavengers were especially numerous to the south of the Abyssinia highlands. An animal killed was an animal completely eaten, unless carefully guarded. The birds would collect from all sides in a very few minutes, even though not one had been in sight in the sky when the game was killed. They made a far cleaner job than the carrion birds of any other country I have visited. In many localities jackals and foxes come up and share the feast. It was in this section of the country that our camels came across the dreaded "gumbor plant" which is fatal to them if eaten in any quantity. We were obliged to halt for about ten days while the trouble ran its course with a loss of nine camels. We tried native remedies as well as medicines from our own supplies but with very moderate success. In my

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opinion, if an animal had eaten enough, he was doomed.

Crossing the Maki River, a deep, swift stream, we struck Lake Zuai, where we found a gabayah or market and were able to purchase jowari (grain) and ghee in fairly large quantities. The lake has a number of hippo stands in the reeds, composed of a heavy forked piece of timber about ten feet high, with a seat from which the natives spear them as they leave the lake in the evening to feed. They also use boats composed of bundles of reeds fastened together, the bow inclined upward and pointed. Sitting on these rafts with a double paddle, they move about rapidly for their fishing.

About sunset I killed a small leopard, near our camp. The natives had just sold us some fish, which they catch in bag-shaped nets weighted with stones. When I picked up my rifle, and left camp for a short stroll along the edge of the lake, I could see a few hippos far out from shore and along the edge flamingos, herons, storks, pelicans, and ducks were settled in countless numbers. There were natives paddling on the water and the island Midaña is covered with huts. It was a distinctly peaceful pastoral scene, and nothing was farther from my thoughts than to see a fine leopard with bright markings spring out of the reeds and stand

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with head turned toward me at about sixty yards.

The bullet struck the point of his left shoulder and came out of the right side. He fell instantly and after a few struggles on the ground lay motionless. There was no need for a second shot. The few leopards I have been lucky enough to bag have nearly always been met with leaving camp or close in its vicinity. I have generally found them fierce and very tenacious of life.

That night a hippo came into our camp. We had no zeriba, it being unnecessary here, and only a shot from the sentry's rifle prevented his walking over our tents. They make long journeys back from the lake in search of new pastures, always returning to the water before dawn. Other inhabitants of this lake, which I have seen nowhere else, shaped like small beaver, even to the flat tail, were very timid and I was never able to obtain a specimen.

On the two occasions when I saw them the sun had just set and the very short twilight of the tropics did not admit of a view clear enough to ascertain certainly to what species they belonged. Since my return to New York I have heard from Herbert Lang of the American Museum of Natural History that they were unquestionably otters, which are found in many parts of Africa. The lake

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teemed with a small and sluggish kind of fish, so they would not lack for food.

Marching southwest from Lake Zuai we crossed a small mountain range, obtaining water from rock pools in little ravines, and came again into a beautiful park country. Here a sluggish salty river leading into a lake, also very brackish, held out small hopes of finding water. We camped on a ridge we had been following, which ran south between four salt lakes, two on either side. At the very end we met a native, armed with the curved knife and long spear of this part of the country. He smiled and conversed pleasantly with us, though trembling so all the time that it was difficult for him to articulate. He informed us he had never seen white men before and water was a long way off to the south. As there were plenty of hartebeeste and Grant about, we determined it could not be many marches away. The following day I bagged a fine greater koodoo by a long shot. There were many cow koodoo about, very tame, but the bulls were few and wild. A game trail led us to a rock pool, which would last us about two days. Some mounted hunting Gallas came to the pool and camped near us. One of their number was anxious to go to the great market at Walamo

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and said he would act as guide but that the next water (sufficient for our caravan) was a long way.

Four marches brought us to it. We had crossed two tiny slate-colored muddy brooks before reaching a small native kraal near the water. That afternoon we had a heavy shower, which explained the pools of rain water we had frequently found and the ability of the Gallas and the game to move about in that salt lake district. Quite a number of the black-and-white long-haired monkey were in a grove of large trees near camp. The first I shot through the heart with a solid bullet from my Mannlicher. He clutched the bough and hung there. The tree was impossible to climb. At that moment a very large male came swinging along and a shot through the body brought him tumbling down. The other still hung there. At last after a long wait I was obliged to fire at his paws to break their hold. The fur is very much prized by natives and Abyssinians. The latter use it principally in the form of a cape for their priests to wear during religious ceremonies.

The Shum of the neighboring village paid us a visit. He read Menelik's letter, standing, uncovered, and then told us that three days' marching would put us on the Bilate River which runs into Lake Margherita. He also told us of another

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lake south of here called Abassa, with a bridge across the center of it. This sounded too interesting to overlook so we determined to make the detour.

Our march down from the hills, under heavy showers, brought us to a swamp lying between two lakes across which there is a rather well-constructed bamboo and grass causeway, probably the bridge referred to by the Shum, so it is possible to pass between the lakes which otherwise came close together at their ends. Mosquitoes were frightful, large, brown and very long-legged. They bit through clothing and rendered it almost impossible for our animals to graze.

The Galla Chief called—a fine-looking tall man who had put up a desperate resistance to the Abyssinians until, seeing its futility, he had made peace and become a loyal subject of Menelik's. He brought the usual presents of a goat, ghee, honey and bread made of corn meal, the round loaves wrapped up in banana leaves. It was well made, superior to any we could bake, perfectly fresh and without red pepper. This is exceptional, as red pepper is very largely used through this section of Africa. To our gift we added six Maria Theresa dollars at his request. He had heard of these small but all-powerful pieces of metal and wished to pos-

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sess some, but it was evident that the cloth, wire and other articles found more favor in his eyes. About four hours' march along a path between hedges of cactus, through many villages, all surrounded with the densest and most beautiful tropical vegetation, brought us to an Abyssinian custom house on the edge of a village, where a great dance was being held in honor of a man who had killed an elephant. The round hut was crowded. A small circle in the center contained the dancers, clapping their hands, shouting and singing. This goes on for eight days. The occasional discharge of a Gras rifle through the roof added to the noise and smell. The wife of the hero wore a bracelet around her right wrist and another on her left ankle,—discs of elephant hide with the outer edge cut in points. Suddenly an Abyssinian watching our animals grazing near by rushed in and said he had seen a leopard. Picking up our rifles we followed him. Karscho also had sighted him as he disappeared behind a deserted kraal. At midnight, just as the moon was rising, I sat down in the doorway of this old hut. The mosquitoes were very bad and later it became very cold and damp, a heavy mist settling down. The kid, which I had fastened on a rope between a tree and one of the doorposts, where there was a clear space somewhat free of

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shadows, fed unconcernedly for a time and then lay down to sleep. About three o'clock the leopard arrived. We could hear him walking about keeping always in the shadows. Finally, after a careful inspection of the situation, he decided it must be dangerous and moved away. Shortly after his departure, a long whistle from camp, the signal agreed on, brought me back there in a hurry only to find that two leopards had been close to camp three times, evincing no fear. Taking up a good position there I waited the rest of the night but, as usual, they never returned. After a conversation with the mighty elephant hero, I discovered his deed of daring had been performed some time before, and many marches to the south.

Passing for a few days through the same type of country, always more or less inhabited, we came to the junction of our path with that running from Sidama to Walamo. It was a flat, open plain. I had gone on a long stalk after a fine reedbuck, which ended successfully with a single shot from my Mannlicher at about one hundred yards,—and was returning to camp with the meat and head when I heard a few shots off to the right. Heading in that direction I came up with Bell, to whom I had lent my .30-40 Winchester, and found he had just killed a fine maneless lion with a single shot.

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He also had been stalking a reedbuck when he noticed vultures flying about oddly instead of settling where there was obviously something to eat. He came around an ant hill directly onto four lions feeding on a water buck; they ran, luckily for him, as he was within five yards of them.

Scrambling up the ant hill to get a better view as they made off through the grass, after several misses, he knocked one over with a shot through the neck. The bullet remained against the skin on the opposite side. The rest of the day and the following night I remained near the kill, but there was no return visit.

A few days later a disagreeable incident, fortunately without fatalities, delayed us several days. A large band of Abyssinians blocked our way and hostilities at once developed, as there is a strong latent animosity between the Somalis and Abyssinians. I heard the uproar when far off to the right of the line of march where I had gone after game and galloped back in time to calm matters somewhat. But progress was impossible, so I hastily gathered the caravan and established as strong a camp as we could. Our own Abyssinians stuck loyally by us. The other force, largely increased by this time, sent three detachments of about one hundred men each, to hold the two

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paths through the hills and the ford, effectually hemming us in.

This condition lasted for about two days with frequent small encounters when we attempted to get water. At last, when the situation had really become critical, one of their leaders, after many consultations with Wogala, an Abyssinian I had originally taken on to take care of the dogs, said they were convinced that our letters from Janhoi were genuine and we were the important people we represented ourselves to be. We later discovered that the strange reason leading to their change of front was that early that morning I had fired at a small hawk about one hundred and twenty yards away sitting in a high tree near where they were cooking their meager rations and he had fallen dead amongst them. Easy as the shot was with a finely sighted Mannlicher, it appeared miraculous for their clumsy Gras rifles.

An envoy presently arrived from their camp and asked for a parley. Keeping him waiting about two hours, he was finally admitted and very sternly interviewed. As a result we were permitted to send two of our men, an Abyssinian and a Somali, to Dejasmatch Balchi, the Governor of the Province, to state our case. Two days later there was a great bustling in their camp. After saddling up and pack-

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ing they drew off their forces and our two messengers returned with no end of apologies from Balchi, another letter written by himself to help us if possible, and also a statement that his commander had exceeded his orders. As our food was exhausted, we were glad to be able to move.

Crossing the river we camped after a short march. I had killed a fine Grevy zebra and large hartebeeste and while camp was being made bagged a Grant gazelle and two bustards, which are always delicious eating. All were shot at ranges well over one hundred yards and only one, the hartebeeste, required a second shot. A small Abyssinian patrol paralleling us on the march having noted this reported it to their commander. Much impressed, he visited us again, more apologetic than ever, and begged us not to show the photo we had taken of him to Menelik or it might mean his life.

We camped on the bank of another sluggish river,—the country thick with water-buck. I counted eleven in one group but saw no especially fine heads. Lions were plentiful, with fresh spoor and much roaring at night. Even the humble tortoise abounded, ranging from a foot to a yard in diameter. The domed shell with its bright mark-

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ings is very beautiful. We stayed out at night in lion zeribas but had no luck.

The rain had brought the scorpions out of their holes, small black ones and large whitish-colored ones. One of the camel men sat on or near one and was stung, fortunately in a very fleshy place, which brought no serious consequences, after a drastic treatment with permanganate. He suffered from the sting, however, for several days.

The following morning we skirted the bank looking for a ford, passing several large bands of water-buck. Then I came across two large bulls fighting. I stalked them to within about eighty-five yards and then killed the larger one with a shot from my .450 Cordite. He fell dead instantly, shot through the shoulders with the high-powered, heavy ball. Reaching the crossing, a poor one, I attempted it first and, the other bank being steep and slippery, brought my horse back on top of me. In the confusion, as several of the mules and ponies had been allowed to follow me, a crocodile grabbed one of the ponies by the hind leg. He was dragged under so quickly that the struggle was over before we could get a shot. There were undoubtedly more than one of the reptiles. Bad as this ford was, it was the only one and had to be crossed. It necessitated taking the loads off in

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mid-stream and handling them up the bank as well as hauling the animals up by ropes. At last we were all over, with no further casualties, and camped near at hand.

That night a heavy shower of rain brought all the goats into my tent. They broke out of their little zeriba and all sixteen of them crowded in to get out of the wet. They climbed on my bed, smashed my mosquito netting, broke the talc in a lantern, crushed my solar topi and put wet mud over everything. I spent the night trying to keep them out. Everything being wet, we did not march until after 10 a.m. and camped on a broad ledge, high above the lake. This necessitated a trip down for water. On such a trip, Ali, my tent boy, almost ran into a buffalo. Throwing a rock to frighten him off, he returned with the news. We determined to wait until the next morning and then to make a long hunt after them. The afternoon we spent on the rocky slopes high above the lake. It proved an interesting one. Not far from camp I sighted two curious reedbuck, coming up within range; careful shots dropped them both. They were a species sometimes called Chanler's reedbuck, found in only a very few localities, generally farther to the south.

Kneeling down to start the work of skinning, I

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almost put my hand on a large snake, half concealed among the rocks. As I sprang back to get Karscho's spear, I almost stepped on another. They were all around us. Hastily improvising a second spear out of my hunting knife lashed to a long staff I had been carrying, we started to clear a space large enough at any rate to safely skin the two antelope. Fortunately, the snakes were very sluggish and comparatively slow-moving. The largest one, just over five feet in length, very thick, and of the same brown mottled color as all the rest, was stabbed several times before he came out with a rush and met his fate. One I had to shoot, a proceeding dangerous from the flying fragments of rock, one of which cut my cheek quite deeply. We were glad to leave the gloomy hills of volcanic rock, scarred with deep ravines and carpeted with these loathsome reptiles. My recollection of my one and only meeting with the so-called Chanler reedbuck has never faded. The ghastly struggle with these snakes, which seemed to be innumerable, crawling in and out of rock crevices all about us, has left a very disagreeable impression, for at first, in spite of our steady killing, their numbers did not seem to diminish.

The following morning we got away early after the buffalo. They were in the thick growth border-

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ing the lake. I came on a fine bull with three cows. A necessarily hasty shot I heard strike, but I feared rather far back. I had no chance for the second barrel of the .450 Cordite and now I was faced by the fact that I must stalk a wounded bull in the thick brush. Guy Dawnay had been killed following a wounded buffalo down near Kilimanjaro and others had met a like fate, under similar circumstances. Still, after a short wait to give him a chance to lie down, I left my gun-bearers and, carrying the heavy rifle, followed his spoor. At first there was plenty of blood, but after a hundred yards or so it ceased almost entirely and only was to be found smeared on the bushes through which he had pushed his way. Some distance farther on a sudden crashing on my left showed I was up with him. He came on rather more slowly than I expected and a steady shot at the point of his right shoulder, not covered by his head, dropped him. The first shot had struck him in the left side a little too far back and, while perhaps ultimately a mortal wound, did not seriously interfere with his actions up to that time. Though full-grown, he was smaller in horn and general bulk than those found south and east of Rudolph.

Returning to camp I went after a Kirk's dik dik and came upon a small lake about one hundred

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yards in diameter, vegetation thickly surrounding it and large trees overhanging the dark brown stinking water. It was full of crocodiles. I have never seen so many, not even in a sacred pool in Beluchistan where they were several deep in the water and were lying entwined on the edges. Three large ones half out of the pool, on roots and decayed logs, I killed with the Mannlicher. The turmoil was terrific as I turned away from the loathsome place. The following night we camped at the foot of the lake. Six Abyssinians turned up, having heard me shoot some ducks on the lake. They were after rhinoceros, there being a great demand for the horn for sword hilts. A small herd of elephants within two hours' journey had killed the brother of one of these hunters and only after much persuasion and financial inducement could they be encouraged to guide us to where the herd had last been seen.

The following morning they were afraid to carry out their agreement of the night before, but, our men having gathered some information while around the camp fire, we set out. A long trek brought us into a forest country and finally to fresh elephant signs. Following these we came to a large open space in the forest almost bare of vegetation, with a single conical ant hill about twenty

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feet in height almost in the center. Striking out across the glade we were already half-way across and nearing the ant hill when the entire troop appeared at the other end, led by a gigantic bull with a single tusk, very long and straight, which glistened in the sunlight and looked to weigh a full hundred pounds. They came out from the forest in single file, and then, in a deliberate and majestic way peculiar to elephants, they slowly formed abreast and commenced to move down the glade. What their intention was cannot be explained, as they could have had no knowledge of our presence, a light favorable breeze blowing. Moving rapidly forward we gained the shelter of the ant hill, which I scaled and, peering over the top, watched their methodical advance, the calves, of which there were a large number, following behind the line. Karscho's face, tense with excitement, and the other natives gray with the peculiar color of Africans when in a tight place, showed me some action could not long be deferred.

When the distance had been shortened to about seventy-five yards I carefully raised the .450 Cordite and sighted on the big bull, who held the center of the moving line. The loud report and heavy impact of the bullet broke the stillness; as their leader, shot through the brain, slipped de-

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liberately forward down on his knees, the line broke and, screaming, with trunks waving, they moved in all directions, but only for a moment. Then, swinging into a line again in single file, they moved to the left and disappeared in the forest. The great area was empty again except for the single bull kneeling before us with ears outstretched motionless. Several other bulls with fair ivory had been in the line, but Karscho's repeated whispered counsel, "Don't shoot, don't shoot," had restrained me from firing. A second shot, even if instantaneously fatal as in the first case, I think would have brought them down on us. Then the ensuing hunt without any cover would probably have had fatal consequences for all of us. The single tooth, when cut out, weighed ninety-eight pounds.

I took up the chase of the herd at once, but, as they were still traveling fast, after several hours I gave it up and returned to camp. Under like circumstances, elephants will often travel very great distances without a stop, feeding as they go.

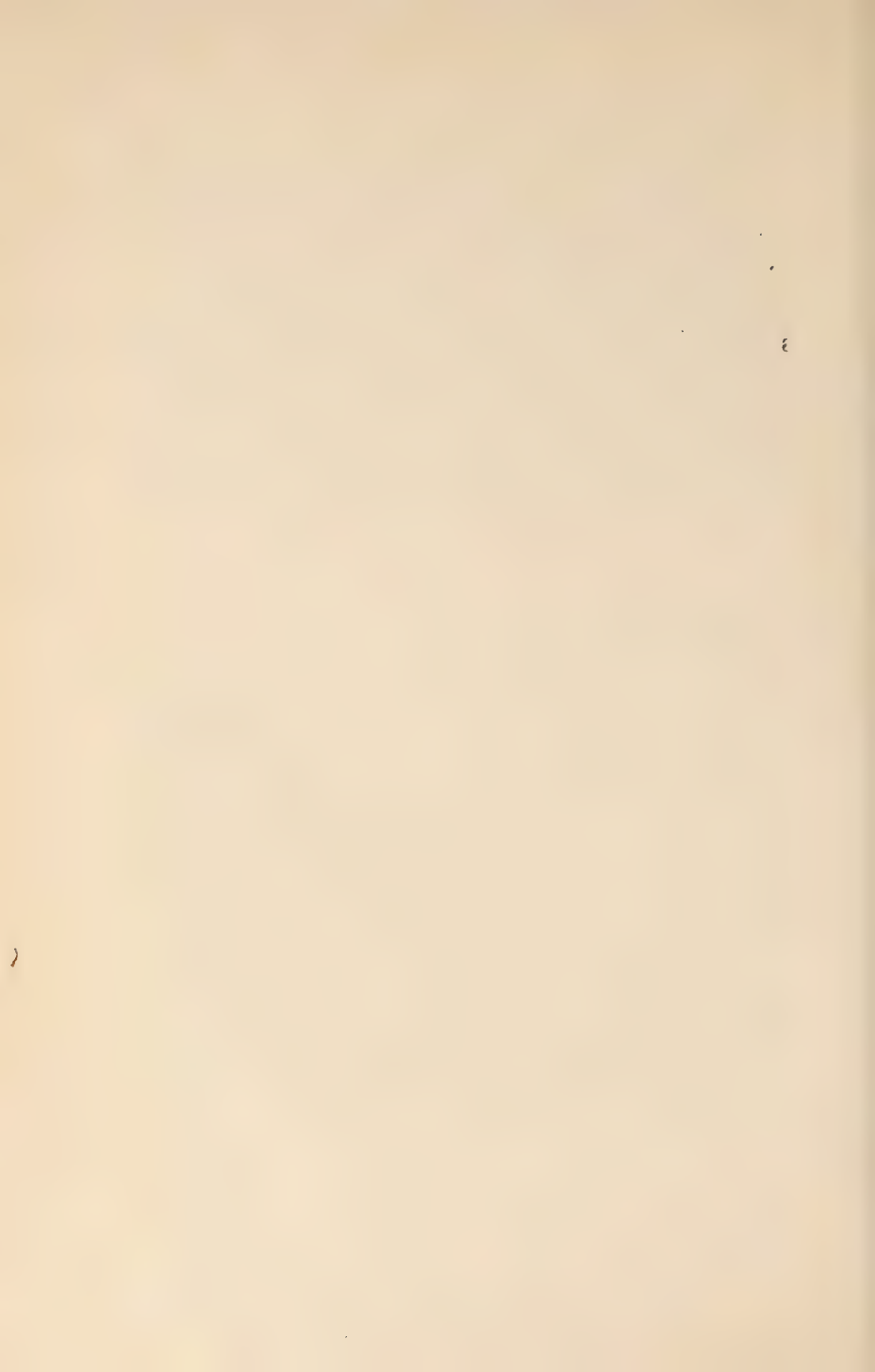
That night at 2 a.m., my tent boy, Ali, woke me, saying "Lion in camp." Picking up a rifle I was out in a moment but an Abyssinian had thrown some blazing brush at him and he had leaped out of the zeriba. Sending on the caravan I remained



ALBINO TOPI



BULL SHOT IN FOREHEAD



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behind all day and, with a donkey tied out, waited the following night for the lion's return. The mosquitoes were terrible. Hyenas came around so close that several times I was nearly obliged to shoot to protect the donkey. Toward morning, the moon having gone down, the lion came up to the rear of my small thorn heap and after moving about suspiciously for a few minutes went away. He did not come back.

Marching fast the following morning to overtake the caravan, as I reached the top of a considerable slope and looked over, I saw a lioness drinking from a pool of rain water in the hollow below. It was a long shot, about 250 yards, but there seemed little chance to get closer. The shot from the Mannlicher struck her in the left hind foot and at once she was lost in the brush. Making fast time down the slope I took up the blood spoor and soon located her under a small thorn tree. As I approached she rose snarling but another bullet at the junction of the neck and shoulder rolled her over dead. She was in fine condition, with a good skin, showing that the hunting had been easy. Gradually the country became more populous, with considerable cultivation.

As we drew nearer Walamo many natives joined us moving in the same direction. The famous mar-

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ket place of Walamo was on a bare high hilltop. The judge of the market, to whom all trade disputes are referred, sat in a tiny thatched hut raised about six feet from the ground. Many kinds of grain, ghee, chicken, sheep and other articles were there in great profusion.

These were the people of Captain Wellby's strange adventure the previous year. His Somalis begged him to eat out of sight in his tent or the devils would enter him with his food. Disregarding this warning and eating in front of his tent on a folding camp table, he had presently become quite seriously ill. He had eaten only mutton, rice, some chapatties and tea cooked by his own natives. Hastily leaving the locality he had completely recovered in about three days.

Our camp completed, I ordered food as usual in front of my tent. The Walamos were squatted in a circle staring intently and occasionally uttering a guttural remark. Having finished my simple meal of reedbuck, rice and tea, I wrote up my diary, and then calling my shikaris started on the afternoon shoot,—with no ill effects. Of course there was no game, but to have altered the routine might have given my natives the idea that perhaps I was affected by the hypnotic stare of those savages.

The reason for their attempt to hypnotize



SHUM OF GILDESSA



KING OF THE GALLAS

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strangers, if such it is, I have never found an explanation for. My Somalis certainly took care not to be watched while eating but the other strangers, and there were many visitors of course to this great market, though seeming to possess knowledge of this power, entirely disregarded it.

The following day the caravan headed again to the south. At Walamo we had received discouraging information—many bad accounts—about the country to be traversed to reach Lake Stephanie. There had been no rain for two or three seasons. The crops had failed. Most of the inhabitants had starved. The game had left. Rivers had dried up. The Abyssinians who control this country, having conquered it a few years before, confirmed all the discouraging reports.

Camped near Lake Margherita in the beautiful province of Baroda with the native huts in groves of banana trees and cattle on every side, the tales of the country to the south seemed unbelievable.

At Gogo, Fitarauri Dori came to pay his respects, with a large retinue bearing presents of flat bread, cakes, honey, firewood and an ox. His priests and aides, with a band of music, accompanied him. The King of the Gallas came in too and allowed himself to be photographed. He had little power left him under Menelik's iron control

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of the country, but managed local affairs among his people.

On a barren windy hilltop near Lake Ciamo, four murderers of the El Boran tribe had paid the supreme penalty. They had climbed up a ladder, composed of a tree trunk with the boughs left on, to the gallows, consisting of another tree trunk set between two uprights, and were then swung off and strangled to death. Of their guilt I had little doubt, as on this outer border of the great Amharic empire murders were an everyday occurrence, and often on the march a corpse would be found, killed perhaps for the copper torque or the ivory bracelets, which are much prized.

The country had become very sparsely populated. The kraals were surrounded by immensely thick thorn fences and finally these became infrequent and the dwellings were thatched huts in trees some thirty or forty feet from the ground. The cattle sheds, circular in shape and thatched, were stoutly constructed of large timber stakes driven into the ground and bound together. We saw much lion spoor, and lesser koodoo, zebra and oribi were plentiful. Abandoned farm land was in evidence, terraced in stone, and small heavily constructed stone huts for the workers to take refuge



HUT OF TREE DWELLERS



MASAI WARRIORS

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in. The population in by-gone years must have been very large.

From a deserted kraal, as I passed by, dashed a bluish gray antelope. I had my shotgun in hand, as I had seen some guinea fowl and wished to add them to our larder; the first barrel rolled him over and I found I had obtained a magnificent specimen of the much-prized Abyssinian duiker—*Cephalophus abyssinicus*. His horns measured $4\frac{3}{8}$ inches, giving him the world's record. I skinned him carefully, myself, for mounting whole, bringing back the leg bones, etc., etc. He is now in the American Museum of Natural History.

On March 11 I had an unfortunate adventure with a rhino. Leaving camp on a mule with my syce and two gun-bearers, after a time I came on fresh rhino spoor and soon saw three rhinos lying on a side hill under a large mimosa tree. Careful inspection through my glasses convinced me that one carried horns large enough to be worth getting. Leaving Hassan with my mule, we started on foot, but at about one hundred yards the birds on the rhinos' backs gave them warning and they sprang to their feet, turning in all directions. As they run up wind when alarmed, I knew if they once started there would be no other chance. So, in spite of the great range for the 10-bore, I fired

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at the left side of the big one, well back, as he quartered away from me. I heard the bullet strike him and instantly they galloped up and over the small slope. Following, I could see a large flat plain with scattered clumps of brush. Two of them were headed straight away. The third was dropping behind and soon he turned away to the right and stopped alongside of a clump of thorn facing away from us. Leaving my second shikari behind, carrying the reloaded double ten myself and followed by Darod Nur with the Winchester .30-40 loaded with solid ball, I went on until I had come up to about sixty yards' distance. Then ordering Darod to wait, I crawled slightly to the left to bring me up abreast of him. At about ten yards' distance, rising to my feet, I shot back of his shoulder (at such short range the neck shot, as I found by later experience, is the really deadly one). He swung as the bullet struck and came fast. As he reached me, I jumped to one side and fired the other barrel where his neck set into his left shoulder and ran forward for the clump of brush, attempting to reload as I ran. The heavy paper shells stuck fast. He had turned at once and followed me, but around this small thicket in deep sand I was almost holding my own when Darod ran up and attempted, unsuccessfully, to



GRASS HUT IN BARODA



CATTLE SHED IN THE LION COUNTRY

To Lake Rudolph and Beyond

fire the Winchester. With a swift side-sweep of his head the rhino threw Darod high in the air and at once stopped and tossed him twice more. By that time I had reloaded and jumping forward fired both barrels from my hip into his shoulder. He staggered back several yards, a white circle showing in his side, burnt by the powder at such close range. This gave me an instant in which to drop the 10-bore and pick up the smaller rifle, lying a few yards away. As he came for me again with lowered head I fired over his horns at his spine severing it and he sank instantly motionless on the ground. Never, in any country under any circumstances, have I seen a living thing receive so many fatal wounds and keep on.

Darod, cool and conscious, remarked, "O Sahib, he was a great rhino." Then I turned to his injuries. My other shikari came up soon, followed by the syce and mule, and we moved him to a more comfortable position under a thorn tree. He had two fearful wounds. The long, slender horn had gone completely through him from the back to the front low down on his right side, bloody froth coming out as he gasped for breath. His right thigh had been pierced just above the knee and the femur broken. It took but a short time to straighten out the broken limb and to bind him

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up, with pads over the open wounds soaked with water from my canteen. Then we waited for the return of my syce, who had gone to the camp for assistance. Darod never lost consciousness and insisted on discussing the great fight and his inability to use the Winchester with its hammer and under lever action. We carried him back in a litter and then made a splint out of split bamboo and dressed his wounds properly. For days the ultimate success of my medical efforts seemed to hang in the balance, but then he took a decided turn for the better.

We were now forced to make some marches, as game and water failed us in that locality. A most ingenious camel litter, balanced by the correct weight of boxes on the opposite side, was constructed by the Somalis. I added a small awning or roof of folded Amerikani supported by sticks to shade him from the glare and heat of the sun. In this Darod made several marches, in comparative comfort, to the shore of Lake Degourabay, the Lake Ciamo of Captain Bottego, the Italian explorer. Here there lived an isolated tribe of Mohammedans, retaining all their religious customs, who welcomed us effusively and urged Darod to remain with them until cured, when he could make his way back through Abyssinia to



RHINO THAT WOUNDED DAROD NUR

To Lake Rudolph and Beyond

his home in Somaliland. After much consideration, since he was now well on the road to recovery, we left him in their care well supplied with the necessary remedies. The plan turned out successfully and a year later, on my return to Aden, Darod Nur was the first man to board the steamer and to request to go with me on another expedition, which he did, again in the capacity of gun-bearer, a position which he filled with his usual courage and coolness.

Just south of the lake was an Abyssinian military post of considerable strength. The old Shum and Basha Islamani, the Abyssinian officer in command, visited us. Their escort, carrying their circular shields overlaid with strips of pure gold and numerous rifles and swords all handsomely decorated, made an imposing spectacle. After much persuasion they consented to be photographed. The Shum had fought gallantly in the Italian war and all his brothers had been killed; notwithstanding this he averred that being photographed was a test of courage still greater than that of war. He announced that the country from here to Lake Rudolph was deserted, the population having died out through the failure of their crops, caused by the two consecutive years of drought. His state-

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ments turned out to be accurate. The population had completely disappeared.

We marched almost due south over trails and paths, some of them roads of real importance, worn deep in the rocky soil. Game was very scarce and the sparse starved inhabitants of the numerous villages we passed through dwindled, the farther we progressed. Desiccated corpses and skeletons were frequently encountered on the way and farther on, where all the inhabitants were dead, the huts often had entire families dead in them. A few of the younger men decided to join my caravan, but the rest seemed to think rain was surely coming and that they could pull through somehow until the next crop. In this section of the country north of Lakes Stephanie and Rudolph the population must have been very dense, but famine had now thinned them out drastically in this northern area and farther south had completely exterminated them. As we climbed among the foothills of the Great Hamarcoche range some zebra and an occasional group of antelope were encountered, but no human beings. A large zebra in magnificent condition proved there must be water and we luckily found it—an insignificant slimy pool among the rocks, retained from some passing shower. In fact, our water was nearly always obtained from



CARRYING WOUNDED SHIKARI



ESA CAMP

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rock pools. Having crossed the mountains we came down again into the plain country north of Stephanie—very dry and with very little game. Numerous villages, all deserted, dotted the wide expanse. The circular thatched huts and well-built cattle kraals indicated a prosperous race, but nothing living remained to enable us to ascertain the exact reason for their disappearance. The fewer dead found led me to think that when the situation had become desperate they might have migrated, taking their herds with them.

Lake Stephanie was dry. This unbelievable fact was finally forced upon us by the skeletons of crocodile and fish and the contours of the land, which showed us that we were undoubtedly standing in the bed of the lake. By digging deep in the clay soil which composed the lake floor we obtained water—liquid mud rather, but quite possible to be used. The camel food was very scarce, as was also the game and after one camp here we struck west for Rudolph, the great inland sea. No drought could dry that up. The trek to the lake was terrible, and indeed but for finding a large rock pool of water the journey would have been impossible. At last the trying days were over and we sighted Rudolph. The water was extremely brackish and

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alkaline, but even the camels enjoyed it. Here was plenty of game, oryx, topi and many other species.

Captain Wellby, when he touched the end of the lake on his journey to the Sobat River, had spoken of seeing an albino topi at this place. The morning after reaching the lake, while out shooting, we sighted him, and organized a careful stalk. It terminated successfully, my friend Butter obtaining this great trophy by a lucky shot with his Mauser. We brought back the skeleton and entire skin and he is now in the British Museum. Of large size, pure white in color, with a fine set of horns and bright pink eyes, this albino hartebeeste is a most curious specimen. The lucky chance that, having been once seen, this unique animal should again be found and shot in the great continent of Africa seems extraordinary.

We turned north here and skirted the lake until we reached the river Omo. This great stream was entirely dry. The village of Murle was deserted. Now we were near the great elephant bush we had so often talked of. There was much old sign but little fresh evidence of their recent presence. Early in the morning of the second day, we struck fresh spoor and without any warning soon came upon a small band in the usual low dense bush interspersed with some large trees. It was very hot and still and

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the stomach rumblings could be heard on several sides as we got into the very midst of the herd. Jama, my new shikari, since Darod's accident, seemed nervous but stuck close behind me. My other shikari I had left when we had first come up with the game and I myself was carrying the 10-bore. Following slowly a winding game-track lately used by elephants as it curved into a small open space we came on three cows and an immense bull standing in a group. The bull was one I had often dreamed of—huge in size and with teeth such as I had never seen in any museum. The treacherous wind must have notified them that something was wrong as they were in an expectant attitude. The bull, broadside to me, swung his great head at once over the back of a small cow in front of him, thus quartering away from me and preventing the head shot. Instantly I fired back of his shoulder, as they broke away through the bush. Running forward I had another shot as they crossed a small open space to the left and then all was silent. Both shots had hit. We found some blood and followed it for hours. At first on the ground as well as on the bushes, rubbed against in their rapid flight—finally only on an occasional bush touched in passing, showing that the blood had ceased to flow. The great girth of an elephant renders it very

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difficult to make a broadside shot tell effectively by locating the heart, the aorta or some vulnerable point. I never saw him again. His footprints were gigantic in size. A few hours later I killed a nice bull without incident, but the memory of that great animal I lost has always remained vivid with me. We shot some nice ivory in the next day or two and then, the elephant apparently having deserted the country, we decided to continue the journey.

At Murle we nailed the British flag high up in a great thorn tree as we had been requested to do by the British foreign office and pressed on around the north end of the lake to the westward, in a vain attempt to reach the Nile. In this we were unsuccessful. Finding no water and little game we finally were forced to turn back and by forced marches return as best we could to Lake Rudolph. Once there, I decided on a return to civilization by the route down Lake Rudolph to Lakes Sugota and Baringo and on to Naivasha, where there was an English outpost and fort, and the oncoming Uganda Railway could undoubtedly be met not many miles away.

The long trek down the east side of this great inland sea, two hundred miles in length, was very interesting. During the day the heat was excessive in spite of the great wind which blew continually

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either on or off the lake, depending on whether it was day or night time. Game was fairly abundant. Inhabitants there were none. The topi were very local; on one day's march we saw vast herds, then seemed to run out of their district and saw them no more. Rhino were always with us. I have seen as many as five together. Always observing them closely, on the lookout for horns such as I had heard Neumann speak of, I rarely encountered one worth shooting. At night while we were marching they were a great nuisance, charging through the caravan. Nine times in one well-to-be-remembered night were men and camels scattered in all directions by their furious charges. The real danger was not so much from the rhino as from the askaris, who could not help firing at them in spite of the strictest orders. The flashes of rifles up and down the caravan length meant ill-directed rifle bullets, but fortunately there were no casualties from this cause. A large-bodied but small-horned rhino wandered up to camp after lunch one day. Our few remaining head of cattle seemed to interest him and he proceeded to investigate them closely. For no apparent reason something enraged him and he suddenly charged at one of the herd. They broke in all directions except one old red animal, lean from marching and poor pastur-

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age, which with lowered head at once attacked him. The battle was of the shortest duration; the rhino seemed totally bewildered and only bent on getting away, which he did in a most crestfallen manner.

About half-way down the lake we encountered some fishing villages, constructed partly on the shore and partly on piles over the water, the usual circular thatched construction. These were sparsely inhabited. We began, too, to see natives out on the lake in their small reed craft fishing. They always paddled away as our caravan approached and, having left our Berthon boat some marches back to lighten the camels' loads, we were not able to follow them out to their houses in the water.

A few days below this point, at the end of a long march, we were making camp on the edge of a stretch of thorny forest which alone seemed capable of growing in this rocky country, when the guard of the feeding animals rushed in and reported many elephants in the neighboring bush. The wind being right, which accounted for their near approach to our camp, we plunged in after them, each with one gun-bearer. In a short distance I came to a small clearing of sand with a large thorn tree in the center, across which lay the game-trail into the forest on the other side. As we

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reached the center of this opening a tall cow with long thin tusks suddenly entered it from the other side. We stopped partially concealed by the tree. She came rapidly on, until on the other side of the protecting bush she stopped, flapping her ears and attempting with raised trunk to find out what we were. I with equal care was attempting to get a chance for a shot at her head. Suddenly, screaming, she came around the bush with a rush and we bolted for the edge of the clearing, which we reached in time to dive under cover of. She stopped close to us and still screaming attempted to locate us. In an instant her trunk darted down, brushed across my shirt and picked up Jama, whom I was firmly holding down by my arm across his chest, drew him out and threw him back onto the white sand of the clearing we had just crossed. An elephant kills with either tusks, knees or forefeet. As she lunged downward at my prostrate gun-bearer, I fired one barrel of the 10-bore into her head. The bullet striking from behind I knew could not be effective but would turn her attention away from Jama. Turning instantly to reach me she exposed her right temple and the snap-shot fired half from my knees and still embarrassed by the thorny tangle went true, and the great animal pitched forward dead, rolling over on her side. The

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Somali was unhurt except for trifling bruises and abrasions. She was the largest cow I ever killed, her teeth weighing thirty pounds apiece, very slender, slightly curved only and in fine condition. We were so close to camp that it was the work of but a moment to help Jama back and with another gun-bearer to start in again. I advanced some distance before coming into contact with the herd. They were milling around confusedly, trumpeting a great deal and seemed to be bad-tempered at being disturbed. Moving in their direction we soon saw the tops of one or two backs showing above the lower brush and an occasional trunk waved in the air searching for the scent of possible disturbers. One back taller than the others seemed to promise a bull. The game-path I was following led in his direction. I went rapidly forward when a loud sigh directly behind me made me glance over my shoulder. An elephant was in the path a few feet behind me, and my shikari was just diving out of sight into the brush. Too late to turn and shoot I darted forward to reach a turn in the path and also throw myself into the brush. Fast as I went the animal reached me and struck with his trunk, the blow knocking off my broad-brimmed double Terai hat and just glancing off my right shoulder. Half down on my hands and knees I got the heavy rifle

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around and fired both barrels almost simultaneously up at his towering form. Where the heavy balls struck him I do not know, but screaming terribly he broke away through the brush. That ended my shooting for the day, as my shoulder was stiff and sore. The elephants in this district certainly lived up to their reputation for bold aggressive action.

Near the end of the lake, well back from its shores, rises the great Mount Kulal. I made a side trip over to the mountain to try for greater koodoo. It was a hot, windy march. There was little vegetation and the ground was covered with shale and large and small boulders—a few snakes and but little game. A careful hunt around the base of the mountain, where there was more vegetation, brought me up to a herd of greater koodoo—five or six cows and a bull—a wonderfully beautiful antelope similar to his smaller relative, the lesser koodoo. They were very timid and after startling them once it required a long and difficult stalk to get within range. Then I was rewarded by seeing the bull fall to the first shot. He rose and went slowly on, but another shot brought him down again and after skinning and packing the meat, horns and skin on one of the mules and eating

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some of the liver cooked over a small thorn fire, we started on the long trek back to camp.

At our last camp on the south end of Rudolph, we loaded our water camels, as the forbidding mountainous country of volcanic rock led us to think water would not be found with certainty within a day's march. That day was hard on the camels. It was very stiff climbing up the stony slopes and then winding among the mountains, sometimes along the edges of gorges where the footing was precarious—especially so for camels, which seem unfitted for rough or slippery going of any sort. These camels were veterans, however, having survived the mountains of Abyssinia and the slippery clay soil of Baroda, almost impassable for camels after a rainfall. Not all of them survived, it is true, one or two having fallen over precipices with dire result.

Once over the slope facing the lake, however, the country changed rapidly and water was found directly on our line of march. From here to Nainvasha there was no lack of water, and there was much vegetation, timber and good camel feed. Game was plentiful. We found many eland, that greatest of African antelope. I was lucky enough to shoot a cow with a remarkably fine head. Why some females of African game carry horns and

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others do not, I have never had satisfactorily explained.

We camped on the hills about the beautiful Lake Baringo and here I realized with a touch of sadness that our expedition was nearly ended. While I had not carried out my original plans, the route followed had been so interesting and the species of game encountered so varied that I had no regrets.

Near here I was lucky enough to get two lions at the same time. It was afternoon and we were camped in an open sandy stretch of country when one of my shikaris ran to my tent and said, "Lions." Hastily picking up a .303, a rifle I never liked, and the .450 Cordite as a second gun, I started in the indicated direction. It had been raining slightly and the track of a herd of Grant gazelle was very clearly defined. About half a mile from camp we came on the lions, three of them, a black-maned male and two females. Walking slowly across the direction we were following they swung around and faced us all abreast. I fired at the face of the lion, which was standing in the center. The bullet struck; he tossed his head and they all turned and went off at a lope. I had two more shots—then taking the heavy rifle I fired both barrels at the lion. At the second shot he fell. The lioness to the

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left had evidently been hit as she went into a clump of thorn bushes; the one to the right, untouched, was out of sight at once. Going up to the lion, which was lying on his side, breathing heavily, I fired a shot into his heart to finish him and then went after the lioness. We soon found her dead among the thorny bushes. She had been hit in the body and the bullet ranging forward had touched some vital spot. The lion had been struck first by the light bullet in the upper jaw, tearing away part of the lip and breaking one of the canine teeth. The bullet that stopped him had almost severed his tail and then gone into his back, as he ran from us. While skinning we found it among the chest muscles. They were both fair-sized animals and in good condition, which was to be expected with so much game about.

A few days more and we reached the top of the escarpment, and met the railway which was creeping up from the coast. We disposed of our camels to an Indian trader. It was sad to leave these fine animals which had been with us so long and had endured so many hardships—not uncomplainingly, it is true, as they always growled and bit during the process of loading, but had done their work magnificently. There was a great shortage of animals of all sorts along the line, on account of the

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difficulty of bringing them through the belt of tsetse fly country near the coast. From here to the coast the country is now so well known that further attempt at description is unnecessary. Our Somalis accompanied us to Mombasa and then went by steamer back to Aden, from which place they could reach their homes on the Somali coast.

The completion of the railroad, with the subsequent influx of settlers and establishment of farms and ranches, has changed this country so in the last twenty years that I much fear I shall be bitterly disappointed on my return. Even in Abyssinia the so-called advance of civilization has made terrible inroads on the game and the ever increasing population has crowded the animals out of some of their best grazing country. Though this of necessity must always be, yet a return to old shooting grounds ever brings to me a real feeling of sorrow.

William FitzHugh Whitehouse.

Importance of Natural Conditions in National Parks

The National Parks must be considered in their relation to the broader conservation viewpoint, which requires that every acre of land be put to the highest use of which it is capable without unnecessary waste or injury. This viewpoint, which by some of the friends of the parks has been regarded as too materialistic and opposed to the best interests of the parks, is, whether we wish it or not, the one from which they will be judged in the long run. Fortunately, it is the one on which the strongest defense of the parks can be based.

Fertile and moderately level lands must be tilled; if they happen to bear magnificent forests the trees must be cut, much as we may regret their loss. Lands which are too steep to cultivate (aside from orchard and vineyard lands), or which are too sandy or sterile to produce good crops without undue fertilizing, should be used for growing forests which will be cut at maturity and then replaced by natural or artificial means. There are

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many million acres of such land, especially in the Lake States and the Coastal Plain of the south. Reckless lumbering, followed by fire, has wrought such havoc that over eighty million acres are now bare of forest.

On certain other lands the natural wonders or scenic beauty are such that their highest use requires preservation for the benefit and enjoyment of all. When the features are of outstanding *national* character, as in the Grand Canyon of the Colorado River, the valley of the Yosemite in California, the Yellowstone region in Wyoming, and others, and at the same time the land happens to belong to the Federal Government, there is no question as to the desirability of withdrawing the land from entry and making it into a national park. Since commercial development is incompatible with and tends to destroy the natural wonders and beauty, it must be rigidly excluded from national parks. The decision as to whether or not any given area should be made into a national park requires careful study and a balancing of the gain in preserving the area, against the sacrifice of resources and possible hardship to local communities dependent on these resources. In some cases the scenery so far outweighs any possible economic use that there is no difficulty in making a decision. In

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other cases the need of settlers for cattle or sheep range, or for timber to build houses, barns and corrals, or for storage of water required for irrigation or power, may be so great as to balance, possibly to outweigh, the claims of an area for inclusion in a national park. In any case the decision must be based not on a narrow desire for parks because they are pleasant to have, or on the incentive for gain on the part of the few who will benefit by economic development, but on broader grounds of the public interest. Far-sighted vision and fairness are essential.

There is another consideration in the creation of national parks. In a new and as yet sparsely settled region, the need of setting aside and preserving a piece of wild and inaccessible country which nobody wants, or apparently will want, is not at once apparent. Yet this is just the time for creating the national park. Economic development and increase in population are so rapid that before we know it settlements have sprung up, the range is supporting prosperous herds of cattle and sheep, the timber is being cut and the streams dammed. The creation of a national park in the region, however desirable, then involves sacrifices and encounters opposition. Who can doubt the

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difficulties which would have to be surmounted in creating the Yellowstone National Park now?

At present the safety of the national parks rests altogether too largely on their recreational aspects. They are called "the nation's playgrounds." Although they can claim first rank in scenic beauty, they are by no means the only playgrounds the nation possesses. The 156,000,000 acres of National Forests are just as much open to the people for recreation. In fact, recreation is now considered as one of the important uses of the national forests, and is being developed by the Forest Service to the fullest possible extent. Furthermore, the forests have one great advantage over the parks, because hunting can be enjoyed on them. The wilderness in many parts of the national forests is just as unspoiled as in the parks, and the scenery is very fine, as, for example, the San Francisco peaks in Arizona, and the Sangre de Cristo mountains in New Mexico. The forests on the higher mountains, being needed for watershed protection, are not allowed to be cut; and there is a movement on foot for preserving on the national forests typical bodies of timber in virgin condition for scientific study and education. From the recreational point of view, the national parks, though they hold front rank for tourist travel on

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account of their scenery and natural features, do not, by any means, enjoy a monopoly.

The maintenance of the national parks in an absolutely natural condition is of the utmost importance for a reason as yet but little understood by the general public, even by those most familiar with parks and most ardent in their defense. This is the opportunity they offer for the study of plants and animals in their natural surroundings. These studies are fascinating in themselves, but besides this they are capable of adding to the sum of scientific knowledge which forms the basis on which rest the practical methods of cultivating crop plants and domestic animals. The national parks are rich fields for the natural sciences included under the term biology, because on them the native fauna and flora may be found more nearly undisturbed than anywhere else. Many interesting plants and animals will survive in the parks long after they have been exterminated over the rest of the country. The opportunity thus afforded for seeing and studying rare forms will not only give pleasure to thousands, but will aid in the solution of difficult scientific problems.

Scientists of recent years have been less and less content with mere collections and identifications (although the importance of correct identification

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must not be minimized), and have more and more sought to learn how each living thing developed to its present form, and why it lives under one set of surroundings and not under others. It is this type of enquiry which led Darwin to make the observations on which he based his theory of evolution. In recent years it has given rise to the brilliant researches on heredity and on the relation of plants and animals to their environment. In addition to their purely scientific interest, which by itself is worth while as adding to the sum of human knowledge, the results of this work have a distinctly practical bearing. Everyone realizes that the ultimate source of the world's food supply is agriculture, including live stock raising. If we stop to think a moment we will see that in order to improve the strains of our various crop plants we must know something of the way in which heredity works, and in order to plant the right crops in the right soil and climate we must know something of how the different plants respond to different types of soil and of climate. Therefore research in heredity and environment furnishes knowledge which is basic to successful and permanent agriculture, and hence to our future food supply.

Research in heredity and environment—in fact practically all research dealing with problems of

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life—requires well-equipped laboratories in which the conditions to be studied can be minutely controlled. But while man-built laboratories are essential, they are not in themselves sufficient. The scientist must have an opportunity to study in nature's laboratory, where the processes of adaptation to environment, and of evolution, are constantly going on. He must compare his results with nature, otherwise he will make mistakes. A well-known botanist once collected five specimens of branches with leaves from a single tree which showed a considerable amount of variation in the different parts of the crown. He sent these to a fellow botanist who was thoroughly familiar with the specimens in a large herbarium, but had apparently never considered it essential to see plants growing in nature, and asked him to identify the "five" trees. A few days later he visited his unsuspecting friend, who spread out the five specimens and said quite seriously: "This one is such and such a tree; that one seems to be such and such but I am not sure; while these three others I have never seen before; they must be *new species*."

This is merely one of the many kinds of errors into which the laboratory student is likely to fall if he does not check his results by observations in the field.

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The importance of the national parks to science is bound up largely with the preservation of the balance of nature. The more this balance is kept free from man's interference, the better is the area for scientific study. That is, the less natural conditions within the parks are interfered with the better. This interference might take the form of introducing non-native game animals, or non-native fish in the streams, or of cutting out dead trees.

The processes of nature are so delicately adjusted that when man interferes in one respect he sets up a chain of consequences the end of which no one can foresee. Darwin's chain from cats to clover is one of the best-known examples. Cats eat mice, which eat the eggs and larvæ of the bumblebees, preventing the development of the mature bees which collect the honey and at the same time pollinate the clover flowers. Thus the cat helps the clover crop by destroying the mice that destroy the bumblebees that fertilize the clover blossoms. It is like "the house that Jack built," only the consequences may be almost endless, and sometimes very awkward or dangerous for man. The extinction of native races in contact with the white man is due to upsetting the delicately adjusted balance with nature under which these races have hitherto

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been able to survive. When we attempt to stamp out an insect pest, like the gypsy moth, by artificial means such as spraying, we also destroy the natural parasites of the insect. Hence, once we have thus upset nature by artificial interference we condemn ourselves to perpetual artificial measures for maintaining control over our natural enemies. Modern civilization depends in a large degree on artificial control of nature. But we are learning that it is both safer and more effective in the long run to work with nature whenever we possibly can.

One of the fruits of modern biological research is a high admiration for the marvelously intricate and delicately adjusted organisms which have evolved from the simplest forms—Mr. Bryan notwithstanding—and a wholesome respect for the inexorable laws of nature. But before we can avoid the fatal consequences of running counter to nature's laws we must know what those laws are; and before we can use nature's help in attaining our ends we must better understand natural processes. All this requires both searching laboratory tests and thorough field studies in areas on which nature has been undisturbed. The realization of this need among those best qualified to understand the situation has reached the point where one of the nation-wide scientific societies, the one dealing

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primarily with the relation of plants and animals to their environment,* has undertaken a campaign to have set aside and preserved for scientific research and education areas on which the fauna and flora may be found undisturbed by outside agencies. It is aimed to have at least one such area in each of the important types of vegetation and animal life. The National Research Council, realizing the importance of the movement, is giving its coöperation. Fortunately the scientific aims coincide fairly well with the aims of sportsmen in setting aside game refuges, and the two groups of interest are working together.

The largest and by far the most important areas on which natural conditions are to be found, and can most readily be preserved, are the national parks. Scientists realize that in seeking for additional natural areas throughout the country they should not lose those already in hand. Therefore, it is not surprising to find these men among the most ardent defenders of the national parks against commercial invasions.

The protection of the plant life on the national parks involves not merely protecting the forests from fire and lumbering, but leaving them *absolutely untouched*. The average person wants to

* The Ecological Society of America.

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“tidy up” by taking out the dead and down trees, which are considered as unsightly and as adding to the danger from fire. In some cases this well-meant desire has gone so far as to cause the cutting out of all the undergrowth, including the tree seedlings and saplings on which the forest must depend for its perpetuation. Around the hotels and other much-frequented places a cleaning up of the dead and down trees, and sometimes even of the undergrowth, is permissible. These spots are part of the human habitation, and as such must be more or less artificial. But to go systematically through the rest of the forest in an endeavor to “improve” it, is wholly unjustifiable, and destroys one of the most important aspects of the parks—their natural conditions. In the forest of Fontainbleau in France, there is a small piece of beech woods known as the “virgin forest” or “artists’ corner.” The trees are all very old. But all the dead and down material, as well as the undergrowth, has been carefully removed so that these trees stand fully exposed in their naked decrepitude, a truly hideous sight. In nature the fallen trees become covered with moss and ferns, and are often the most beautiful part of the forest. These mossy ridges, which once were tree trunks, form admirable seed beds, especially for young spruces, hem-

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locks and similar kinds of trees. Hence they are often not only beautiful, but play an important part in the perpetuation of the forest. Protection from fire can be secured by well-located fire lines, lookout stations and patrols much more effectively and cheaply than by cleaning out dead trees and undergrowth.

The maintenance of absolutely natural conditions in the national parks will greatly add to the enjoyment to be derived from them; and the privilege of seeing beautiful valleys and streams without dams and power lines will be but a part of this enjoyment. An even greater pleasure to the true lover of wild life will be the opportunity to see wild animals in their native haunts and to observe their ways. The experience of explorers in remote regions to which man has not yet penetrated has shown that the wild animals which have not been hunted or disturbed often pay little attention to man. It is possible to go surprisingly close to them without frightening them away. There is a common belief that all animals are instinctively afraid of man, and will flee on sight. This is strictly true only where they have come to regard man as their enemy because they have been hunted. Otherwise man is no more to them than some other strange animal, and often is an object of their intense curi-

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osity. Often, however, when wild animals detect the scent of man, they show great fear and flee at once. This may be due to the strangeness of this odor rather than to the fact that it is the odor of man.

The results of protection in the older parks, particularly in the Yellowstone, corroborate these experiences as to the tameness of wild creatures which have not been hunted. Everyone who has been in the Yellowstone knows the pleasure of having seen elk, beaver or bears at close range. The animals seem to learn rather quickly that they have nothing to fear. When a game refuge is established it is not long before the partridges, ducks and other creatures, find it out and congregate there in large numbers. Similarly with song birds around orchards and houses.

The sentiment in favor of keeping the national parks absolutely natural was crystallized at the annual meeting of the American Association for the Advancement of Science, in December, 1921, by the adoption of the following resolution without a dissenting voice:

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A RESOLUTION BEARING ON THE INTRODUCTION OF NON-NATIVE PLANTS AND ANIMALS INTO THE NATIONAL PARKS OF THE UNITED STATES

Whereas, one of the primary duties of the National Park Service is to pass on to future generations for scientific study and education natural areas on which the native flora and fauna may be found undisturbed by outside agencies;

Whereas, the planting of non-native trees, shrubs or other plants, the stocking of waters with non-native fish or the liberating of game animals not native to the region impairs or destroys the natural conditions and native wilderness of the Parks;

BE IT RESOLVED that the American Association for the Advancement of Science strongly opposes the introduction of non-native plants and animals into the National Parks, and all other unessential interference with natural conditions, and urges the National Park Service to prohibit all such introductions and interference.

This resolution unquestionably represents the feeling of a large number of persons outside of the main body of scientists. It expresses a desire which is certain to become practically universal when once the value of the national parks, not only for recreation, but for science and education, is more generally understood. When this time comes the danger of commercial invasions which are at

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present threatening the parks will be materially diminished, though there will always be the need of constant vigilance.

The broad conservation point of view, instead of undermining the national parks, strengthens them, by showing their true position in the life and welfare of the nation. From this point of view those who have the best interests of the public at heart, the friends of the national parks and national forests and all lovers of the out-of-doors, will join forces, and work together for the protection of our parks, forests and wild life.

To summarize: The broad conservation viewpoint requires using all the land of the country for the highest purpose of which it is capable. Areas containing scenery or other natural features of such outstanding national character as to outweigh the commercial development of their resources serve their highest purpose in national parks. The importance of the parks in science and education requires their complete preservation in an absolutely natural condition. The sciences which carry on research in heredity and in environment, and are constantly increasing the store of knowledge on which depends our cultivation of plants and animals, and hence our food supply, require areas on which the balance of nature may be found un-

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disturbed. The national parks are the largest areas on which natural conditions now exist and can readily be maintained. Hence they are essential in sciences on which the public welfare rests. Plant life should not be disturbed by removing dead and down trees and undergrowth, because to do so interferes with the balance of nature, and removes the natural site of certain beautiful mosses and ferns, as well as the best seed bed of certain forest trees. Preservation of the national parks increases their attractiveness by rendering many of the wild creatures unafraid of man and hence easily approached and observed. The resolution unanimously adopted by the main body of scientists of the country opposing the introduction into the national parks of non-native plants and animals, and all unessential interference with natural conditions, reflects a sentiment which is sure to become practically universal when the value of the parks for science and education is more generally realized. Friends of the parks, forests and wild life will unite to protect the public interest in these matters.

Barrington Moore.

The American Bison in 1924

There are a large number of semi-domesticated buffalo in North America. Most of these are under fence. Of what has been written about them a part is accurate, and a part fanciful, but the accounts are widely scattered and the few people who have personal knowledge of the origin of the different herds have passed away or have forgotten the details of these events. It seems worth while, therefore, to attempt to bring together and set down such facts as are readily accessible about some of the more important groups, in a form to be read by those who hereafter may wish to study the subject.

Current events too often make little impression on the mind, and as time goes by are easily forgotten. It is only when we try to recall occurrences that took place under our own observation that we begin to realize how fallible is memory as to details, and how difficult it is to procure from persons who witnessed the events definite information on subjects which seemed commonplace when they

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happened, but which now possess a real interest.

It is fortunate that we possess records which tell something about the origin of the largest surviving herd of buffalo—that owned by the Dominion of Canada. This appears to be the only one that was established before 1880. All other groups of the earliest tame buffalo have either been absorbed in other herds, or their history has been lost.

Except for two small groups, all the buffalo surviving in North America at the present day are under control. Of the wild groups, one, numbering perhaps a hundred and twenty-five, is in the eastern portion of the Yellowstone National Park, and consists of the descendants of that small number of the park buffalo that escaped the poachers who preyed on them up to about 1894. At the beginning of the present century, there were supposed to be only twenty or twenty-five of these buffalo; but they have considerably increased and give promise of surviving in a wild state. Two years ago McBride, then a park ranger, estimated their number at seventy males and fifty-five females—twenty-two being old cows. The other wild group consists of the woods buffalo of the country north of Peace River, now considered to represent a race by itself—*athabaskæ*. Twenty

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years ago their number was guessed at as about five hundred; but by this time they should have considerably increased, for the Canadian Government is taking strenuous measures to protect them from being killed by the Indians. The late Gordon Hewitt estimated them as possibly two thousand, divided into two equal herds.

The primitive range of the buffalo is well known, and is shown on the map in Dr. J. A. Allen's great work published many years ago. Its eastern border included western New York, Pennsylvania and other states to the south, and at some points almost reached the Atlantic coast. It was probably found in northern Alabama, and further west reached down into Mississippi and Louisiana, nearly to the gulf.

It is not so generally known that a suggestion has been brought out by Dr. Gerritt S. Miller that the species may have been found as far east as Syracuse, New York. We are most of us familiar with Mr. Shoemaker's story of the Pennsylvania bison hunt.

Less well known is the announcement by Dr. Glover M. Allen, of Cambridge, of the discovery years ago of some bison teeth at Cape Cod, but these go back to glacial time.

The plains Indians had subsisted on the buffalo

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for many generations, but until the coming of the white man the destruction they caused was considerable and never equaled the annual increase of the herds. Nor under natural conditions could the Indians ever have made any serious impression on the species.

The destruction of the buffalo followed closely on the invasion of its territory by the white man—from east to west. This was to be expected. The noisy arms of the white hunter not only killed the buffalo, but frightened and drove them away to other regions. For nearly a hundred years there were constant complaints by Indians of the increasing difficulty they found in obtaining their customary food because the buffalo had been killed or driven away by the whites.

The hunters of early days killed for food alone; but this was not true of the emigrants when, before the middle of the last century, they began to pass through the plains country where the buffalo were then so abundant. These travelers killed buffalo for the mere fun of killing them and, having shot down one great beast, moved on to shoot down another. The work of destruction by this means, if not rapid, was continuous; but in 1870 and 1871, following the construction of railroads beyond the Missouri River, began a wholesale commercial

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extermination in order to secure the leather the buffalo produced.

The building of the Union Pacific Railroad divided the plains buffalo, making a northern and a southern herd; and a little later the Kansas Pacific and the Atchison, Topeka & Santa Fé railroads were built into the buffalo range. Thus from 1871 to 1876 the southern herd was within easy reach of transportation lines which carried the hides to a market; and the buffalo were constantly pursued by skin hunters. Hides were worth—at different times and places—from \$1.25 down to \$.25, and the only expense of collecting them was the ammunition and the labor.

This seemed to some men an easy way to make a living, and many undertook it and for a time found it profitable. The meat was never saved. The buffalo skinners' methods have often been described and the millions of hides taken set down in many tables.

By 1876 these southern buffalo had been practically exterminated. Not all had been killed; for a few were left scattered about in different places. Down in the panhandle of Texas some survived; and here, about ten years later, C. J. Jones began to secure the calves and the few cows which were the foundation of his—at one time considerable—

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herd, whose blood has since been distributed all through the United States, and far up into Canada.

The northern herd was destroyed later than the southern—say 1880 to 1883. In the earlier of these years, many buffalo were killed and their hides shipped down the Missouri River to Bismarck to go east over the Northern Pacific Railroad; but this took place only near the river. The skins shipped in these earlier years were chiefly dressed robes which the traders constantly urged the Indians to bring in and for which they offered continually higher prices.

A little later, the construction of the Northern Pacific Railroad through portions of Dakota and Montana gave an easy exit for hides secured by the same methods that had been followed in the southern country. The Indians were more than ever urged to bring in robes, and by 1883 the northern buffalo were gone. Scattered about out of sight a few animals remained; and, in the country visited by Dr. Hornaday and Dr. D. G. Elliot in 1886, and for some years after that, there were some on the head of the Dry Fork of the Missouri in what is now eastern Montana. Some of these were taken for scientific purposes; and then for a time the few buffalo in that locality

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were little molested, were protected by the local cowboys, who were proud of them, and to some extent increased. Then about the year 1899, a large camp of Red River half-breeds, who, soon after the Riel Rebellion, had fled into the United States from Canada, made a trip into the Dry Fork country and remained there, it is said, until the last one of these buffalo had been killed.

I happened to see these half-breeds when they were moving into that country, but did not learn what they were seeking until a year or two later.

The buffalo has been held in captivity almost since the first settlements. Kalm states that before the middle of the eighteenth century buffalo calves had often been taken to Quebec, and that people in the Carolinas had captured calves and brought them up with their cattle. Other writers have remarked on the desirability of domesticating the animal for its flesh and for its wool; and Gallatin speaks of its domestication and of breeding the buffalo with domestic cattle. Sibley, writing of the Northwest, refers to the rearing of buffalo calves in domestication and their use in the yoke.

The best-known account of attempts at domestication is that given by Robert Wickliffe in a letter to Audubon, in which he says that for thirty years



Half blood cow

Three-quarter buffalo

HYBRID BUFFALO

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previous to 1843 he had had tame buffalo which usually ran with his stock of farm cattle. He also speaks of hybridizing buffalo with the cattle, finding the progeny fertile among themselves and with either parent. The account at length is found in Audubon and Bachman's *Viviparous Quadrupeds of North America*, Vol. II, pp. 52-54.

In books written two generations ago, tame buffalo calves were often mentioned as being found about fur-trading posts in the Upper Missouri country; and in 1876 I saw a group of calves in the valley of the Upper Yellowstone, and at another place in the same region were some bulls that had been broken to yoke. A ranchman told me of a pair he had broken to haul, which, he said, could pull more than any two yoke of cattle on the place. On the other hand, they were not under good control; and later, one of the two animals so used by this man broke its neck in struggling with the yoke. C. J. Jones broke a pair, and two calves from the Austin Corbin Park herd were broken to drive by Mr. Harold Baynes, and were taken about to county fairs but never became as tractable as domestic oxen. Hornaday told of a yoke of cows used by a German in the Tongue River Valley. No effort at buffalo domestication has as yet been wholly successful.

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The day for the use of oxen is of course long past, and this aspect of domestication has now no practical interest. Yet buffalo are about as easily handled as cattle, and this is seen in the way in which the animals of the tame herd are driven in the Yellowstone Park today, and in which the Allard and Conrad herds in western Montana were handled, as described in another place. Not very long ago I saw two hundred and fifty or three hundred head of the tame herd of Yellowstone Park buffalo brought down a long distance from the mountains by five riders assisted by two dogs. The buffalo were apparently pushed along about as easily as range cattle would have been, though they traveled faster; and those that occasionally attempted to break back, as range cattle so often do, were readily overtaken and brought back to the herd. Under ordinary circumstances buffalo respect a fence, and on the whole are easily cared for.

C. J. Jones, who, during his residence at Garden City, Kansas, had a considerable herd of buffalo, and some other people interested in buffalo, had at one time great hopes of producing, by an infusion of buffalo blood on domestic stock, a strain of range cattle which, for size and hardiness, would prove much more valuable than the

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ordinary domestic stock. Many experiments in crossbreeding were made, and some animals were produced of extraordinary excellence. The difficulties of establishing the breed have not been overcome, and at present, since the old style methods of growing range cattle have become obsolete, one motive for establishing such a hardy breed has been taken away. I described, many years ago, a remarkable half-breed cow that Jones possessed. It was as large as any ox that I have ever seen, and was a beautiful animal.

Thirty or forty years ago, a number of small groups of buffalo were held in captivity, which, after much shifting around, formed the basis of existing herds of importance.

Of these, one of the earliest was that owned by Mr. S. L. Bedson, Stony Mountain, Manitoba, who, from five buffalo calves secured in 1877, developed a herd, mostly pure bloods but with some crossbreeds, which in 1888 numbered about eighty head. These were purchased in that year by C. J. Jones, of Garden City, Kansas.

The Goodnight herd of Clarendon, Texas, consisted in 1888 of about a dozen animals, some of which afterwards passed into the hands of C. J. Jones. This herd came from four wild calves, roped in the Paloduro Canyon. It has greatly in-

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creased and Charles Goodnight has sold many buffalo to breeders.

The Allard herd had its origin in buffalo captured on the plains and taken across the mountains. Allard and Pablo afterward purchased the Jones herd, which then included the Bedson herd and some animals purchased by Jones from the Goodnight herd. After Charles Allard's death, Mrs. Conrad, of Kalispell, Montana, bought Mrs. Allard's share of the herd; and the Eaton Brothers, the greater part of the shares of Joseph Allard and the two daughters. From this on, the Allard buffalo were known as the Pablo herd, and were finally sold to the Canadian Government. The story of the origin of the Allard herd is told elsewhere.

Between the years 1886 and 1889, C. J. Jones, of Garden City, Kansas, who was an old buffalo skinner, gave much time and effort to capturing calves and full-grown cows from the scattered buffalo that then still ranged in the panhandle of Texas. Jones roped and saved many calves and some cows; and the total surviving result of his captures was fifty-seven animals. To this number were added the Bedson herd and the animals purchased from Charles Goodnight.

The Austin Corbin herd, at the Blue Mountain

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Forest in New Hampshire, was founded in 1888 and came from the Jones herd in Kansas and another group in captivity on the high plains.

The "Scotty" Philip herd was one of the very early plains buffalo herds.

When the Eaton Brothers were in the bad lands of Dakota, Howard Eaton had some buffalo and was purchasing, from Jones, Allard and other people, buffalo which he sold again. In November, 1902, and January, 1903, he sold to the United States Government eighteen cows and three bulls, of which the cows came from the Allard herd and the bulls from the Goodnight herd. This is the origin of the tame herd in the Yellowstone Park now numbering more than five hundred. Colonel John Pitcher, formerly superintendent of the Yellowstone Park, used to speak of Howard Eaton as the father of the tame herd. There have been a few additions to this tame herd, among them four wild calves captured in the park.

Incidentally, Howard Eaton also sent some buffalo and elk to Buenos Aires in the Argentine, for the Exposition of 1910. The animals were on the boat six weeks from New York to Buenos Aires, and made the voyage in very good condition.

The great preserve in western Massachusetts,

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started many years ago by Hon. W. C. Whitney, was originally stocked with ten buffalo purchased by Mr. Whitney from Jones. These increased to some extent; but in 1903 Mr. Whitney gave up his preserve, and twenty-six of his buffalo were presented to the New York Zoölogical Park.

The New York Zoölogical Park originally procured seven buffalo, part of which came from the Jones herd and part from the Goodnight herd. The donation from Mr. Whitney considerably increased the number, and the Zoölogical Society later donated buffalo to establish other herds. In 1906 it presented to the Secretary of Agriculture fifteen animals for the Wichita herd in Oklahoma and in 1913 supplied fourteen for a herd in the Wind Cave National Park in South Dakota.

The herd on the Montana Bison Range originated in thirty-seven head of buffalo purchased from the Conrad herd by the American Bison Society, and by it presented to the United States Government. These animals were added to by a gift of three buffalo from the Corbin herd. As already stated, the Conrad herd had been a part of the Allard herd, and during the last ten years it has met with no mischances and has greatly increased.

The important herds of buffalo in existence

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today are those belonging to the Canadian Government, at Wainright, Alberta, the Philip herd, near Pierre, South Dakota, the Yellowstone Park tame herd, that on the Montana Bison Range near Dixon, that on the Wichita Game Preserve in Oklahoma, the Goodnight herd at Goodnight, Texas, the Wind Cave herd in South Dakota, the Antelope Island herd in Great Salt Lake, the Trinchera herd in Colorado, the former Conrad herd, that of General Harry Trexler in Pennsylvania, the herd belonging to Gordon W. Lillie and the Blue Mountain herd in New Hampshire. These groups are well scattered, breeding freely and increasing in numbers. The survival of the buffalo stock has been assured.

Besides these larger herds, there are a few smaller groups scattered about in the possession of individuals, of zoölogical societies or in public parks. The few buffalo, once in the possession of showmen, little by little fell into the hands of larger owners.

The Dominion of Canada has the largest buffalo herd in the world. A count of the main herd at Buffalo Park, Wainright, made in 1920, gave 5,152 individuals; but it was believed that by the end of 1921 the number at Buffalo Park had reached 6,000 head. At Elk Island Park, at the

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latest count, there were 254; and in the Rocky Mountain Park, 13. The herds are increasing rapidly.

The foundation of this great buffalo herd was the Allard herd from Montana, later known as the Pablo herd. Charles Allard and Michel Pablo were partners in the cattle business; and their buffalo had their beginnings in a few calves purchased probably in 1879. Pablo and Allard later bought the Jones herd, which included, as has been said, the Bedson herd.

I knew Charles Allard when his buffalo were few in number and little considered; yet even at that time all buffalo under fence seemed to me interesting, and I kept in touch with him up to the time of his death. I still have one of his letters which tells of his buffalo more than thirty-five years ago, and has therefore a real interest. It is dated Ravalli, Montana, February 23, 1889, and paragraphs from it read:

We have 34 head of buffalo, about half males. They were caught on the plains by Indians some thirteen years ago. 4 were the number caught, and these grewed from these 4. We bought them from the Indians.

They run on the range with our domestic cattle, but they do not cross with our cattle. I have not tried crossing

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them, but have seen parties that crossed them years ago with good success.

Yours,

Chas. Allard.

After Charles Allard's death, Michel Pablo was in sole charge of the herd. The change of management made it more difficult to learn about the herd's condition, for Pablo was not a correspondent and, with the best intentions in the world, put off indefinitely any response to letters.

Meantime, I had learned something of the history of these little buffalo before they left the plains and passed into the hands of Allard and Pablo; for the late Charles Aubrey, who had long lived in northern Montana, and knew intimately several Indian tribes there, was an acquaintance and friend of many years' standing. Aubrey had known Sam, the Pend d'Oreille Indian who caught the calves afterward bought by Allard and Pablo; and, in the year 1902, at my request, he set down his recollections of the events connected with their capture. The same year, I requested J. B. Monroe, of Blackfoot, Montana, to cross the mountains, visit Michel Pablo, and inspect and report on his buffalo and those of the Conrad herd, recently bought from some of the Allard heirs.

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From Allard's letter, already quoted, it appears that Sam's passage across the mountains with his buffalo calves had not been free from accident and that by the time the calves were settled in the Flat-head Valley, their number had been reduced to four.

These bits of detailed history, given by Aubrey and Monroe, were printed in *Forest and Stream* in 1902, and I repeat their substance here, sometimes in the original words of the writer. Thus Aubrey says:

"In the year 1877 I was an Indian trader, located on the Marias River. A few miles above me, at Willow Rounds, Col. Culbertson, of the American Fur Company, had a winter trading post. On the river below me was located a wandering trader.

"This part of the river was a favorite winter hunting ground for the Blackfeet. There was good grass for the buffalo horses. The river bottom was well timbered, which furnished fuel and shelter. The high, level prairie to the north was a favorite winter range of the buffalo. The Marias was the main watering ground for all game between it and Milk River, one hundred miles to the northward.

"Close by, and on the north side of the river, some three miles below me, was the great medicine

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rock of the Blackfeet. All war parties paid tribute to it as they passed. They placed on it articles of value, and painted it, praying that they might be successful in war. The mothers of families offered presents, with prayers to this medicine rock for the recovery of their children in case of sickness, or asked that the unborn child might be a man. In the spring, after the winter's hunt was over, this was a general point of gathering; and near here passed the summer route of travel. At that time the soldier lodge was held, and laws and rules laid down for the summer's hunt, for friendly visits, and for war also; to protect their range and country from invasion by other tribes. Past here they journeyed on their way to the summer hunting ground in the Cypress Hill far to the north. The historian of the future, who may write of the Blackfeet, will find interesting material in this country.

"Of the three traders who had posts in this favorably located country, I was called by the Indians The Man in the Middle, for the reason that I was between the other two. My post was called Ft. Custer. All foreign Indians gave me the preference in trade, for the reason I gave them the same treatment that I gave my own people—the whites.

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"Among the Indians who traded with me that winter were the Sarcees and Stonies, from the far north; the Blackfeet proper, the Kootenais and Klamaths, from toward the Coast; the Nez Percés, Gros Ventres, Assinaboines, Pend d'Oreilles and one family of Crows. Because of the Nez Percé war, all these tribes were then in sympathy with each other.

"Among the Pend d'Oreille Indians who made up a hunting party from across the mountains, was an ambitious, bright, middle-aged man—of the warrior class, but not a chief—whose Christian name was Sam. He was known to the Blackfeet as Short Coyote. He was a typical Pend d'Oreille, with the economical turn of mind that those Indians had gained from their early Christian instructors, Fathers De Smet and Ravalli. I often met Sam in the way of trade, and he indicated more than ordinary friendship for me. My interpreter for the Blackfeet was a three-quarter blood Blackfoot, Baptiste Champaigne. His father was the noted Michel Champaigne, trader and interpreter for the American Fur Company.

"Baptiste's wife was a sister of Yellow Wolf, a Blackfoot warrior, still living here. She had a niece whose name was Mi-sum-mi-mo-na, who, being rather a comely girl, had attracted the atten-

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tion of Sam, the Pend d'Oreille. Sam made propositions to her kinsfolk, Yellow Wolf, Champaigne and his wife, that he be permitted to marry Mism-mi-mo-na, and offered for her sixteen head of good horses. The offer was tempting and she became his wife. A short time afterward Baptiste gave me the story of the affair. I told him frankly that he had made a mistake. He asked my reasons. I said to him: 'You are a strong Catholic and your Church does not permit polygamous marriages.'

"By the rules and laws regulating marriage among the Pend d'Oreilles, Sam was punishable by both fine and flogging by the soldier band of the Pend d'Oreilles. Baptiste was worried over my view of the marriage. Sam's Pend d'Oreille wife was much opposed to his second marriage, and appealed to me to talk with him and tell him that he must not go crazy, that the Pend d'Oreilles were taught to have but one wife, while the Blackfeet might have any number they could buy and support.

"In course of time Sam's first wife made so many objections, and so continually quarreled with him over his second marriage, that there was no peace in the family. By early spring (1878), feeling had risen to such a condition that Sam shot and wounded his first wife. It was a flesh wound

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in the shoulder. She was still asserting the rights of Christian marriage. She showed great love and affection for Sam, which he did not appreciate or reciprocate. Conditions were such that the Black-foot wife, though fond of excitement and war, could not endure the continual strife, and found life in Sam's lodge unbearable.

"When Baptiste spoke to me about his niece's troubles, I told him that Sam had given presents for the girl and that his interference would not be permitted. But the affair looked serious to Baptiste, for he feared for the life of his niece.

"In the course of a few days, Sam, whom I had not seen for some time, called on me. I found him seemingly in the state of mind where the Indian says, 'my heart is bad.' He had his gun out of its cover and his blanket off. This in an Indian means war. I saw that there was a crisis in his affairs, and I signed him to sit down. I sat down beside him, knowing that if he wanted to make a gun play, which I apprehended from his actions, I would be near him, and could close with him and give him an even showdown for the gun. I reasoned with him in the sign language, reminding him that he was alone among the Blackfeet, his people having all gone back home across the mountains. I told him he had made a mistake, but there

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was time yet for him to make it right, and advised him to come back in two days and I would tell him what I thought best. What I wanted was time, for a wild Indian in his war paint, mad and wanting to kill someone, is a bad customer to argue with. Sam departed without ceremony. He heeded my request and returned in two days' time.

"In the meantime I had a talk with my interpreter, Champaigne. I found he had counseled with his wife and had advocated a separation of his niece and Sam. This fact had been communicated to Sam, and led him, in his now desperate frame of mind, to wish to kill Champaigne, and this was the object of his visit to my store.

"When Sam returned I found him in a somewhat better frame of mind. I said to him, 'When do you cross the mountains to your people?' He informed me that he was lonesome, and wanted to go, but he feared he would be punished by the Fathers of St. Ignatius Mission, in the Flathead Valley where he had been married. I carefully went over his affairs and impressed on him the fact that he had violated the law of his people. Now he must be careful and keep out of further trouble. I thought there was still a chance to make peace with the soldier band of his tribe by getting a pardon through the Fathers. To that end I would assist him by giving

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him a letter to Father Ravalli, stating that he (Sam) was not a drunken or lazy Indian. I also suggested that in connection with my letter he make a peace offering to the Fathers, in the hope it would lighten his punishment for marrying the Blackfoot woman. He told me he had nothing to give, and he could not stop the punishment, which I found he dreaded very much. I then suggested that as he was a good hunter, an expert horseman, and could handle a lasso well, he rope some buffalo calves—now nearly a year old—hobble them and keep them with my milch cows. He could use my corrals until they were gentle, and then could drive them across the mountains by the Cadotte Pass, and give them as a peace offering to the Fathers at the mission. He looked at me in surprise and doubt. I explained to him that as there were no buffalo in the Flathead country, I thought the Fathers would appreciate the gift. He at once said he would try my plan. I encouraged him to go to work at once, and soon saw him arranging for a hunting trip.

“Next day I made a visit to his lodge and found Sam and his Pend d'Oreille wife hard at work, and both in a very pleasant humor. I asked in the sign language of the wife, ‘Where is the Blackfoot woman?’ She informed me in a very serious man-

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ner that when the Blackfeet had broken camp, her people had taken her away. I then asked her to help Sam all she could. She smiled and said she would. I asked Sam, 'When will you be ready for your trip?' He answered, 'In two sleeps.'

"In answer to my inquiries as to how he proposed to handle the buffalo, he told me he would catch the young buffalo; he would then picket each by one leg at the place where he caught it. He would then take a blanket, peg it down at the ground at the outer limit of the picket line. I asked him why he did this. He replied it would attract the buffalo's attention and keep it quiet; by smelling the blanket it would become accustomed to the smell of man, and would not be alarmed at his approach. He would catch and handle two at one time on the prairie. They would then be driven in and kept with the milch cows.

"Sam was successful on his first hunt and soon drove in two fine calves, then, April 1878, nearly yearling buffalo—a heifer and a bull. The heifer was loose, the bull side-hobbled. The milch cows did not take kindly to the buffalo, but the buffalo persisted in being friendly. They finally made friends, for after a while the cows ceased to regard them as a curiosity, and seemed to enjoy their presence. Sam rested a few days after his

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first trip, his wife joining him in telling me the story of the wild chase and the fierce struggles with their captives. The hunt was far away, as the buffalo were already working to the summer range on the Saskatchewan. This would now cause some change in his plans. Being alone, he was afraid of the enemy—the Indians of the North. He would only risk one more hunt, and informed me I could look for him in eight sleeps. If he did not return then, he had been attacked by some war party. In that event he hoped I would make some effort to look him up. When I got up the next morning Sam was gone.

“True to his promise, he returned at the end of eight days with five young buffalo—two bulls and three heifers. Each buffalo was head and foot hobbled; the head and front foot tied together, with a skin strap two feet long. Each bull was dragging a long lariat, so as to be easily caught for night picketing. Sam was well pleased to find the first two buffalo so contented with the domestic cows. The milch cows objected as before, but the new arrivals took kindly to their new-found friends. Sam told me they had met with no accident. He had worked hard—like a white man, as he expressed it—the rope skinning his hands many times. One could never tell when a buffalo would

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jump for liberty. He told me of killing one heifer, which he would have liked to save. She had a very fine, bright coat. In a hard chase along the side of a steep coulee, he singled her out of a bunch of cows. He threw his rope, and the noose settled on her neck. His horse, a powerful roan, settled for the shock. In snubbing, he gave her too much rope, and in the fall, which came an instant later, this fine heifer's neck was broken.

"His wife advised him to quit now. They already had five on the last hunt, and she did not like the death of this fine animal. To her it seemed a bad sign. She said to him, 'This means we must stop.'

"Sam herded his buffalo with the milk stock for five days, resting and making arrangements for his trip across the mountains. He was feeling satisfied with his work, and was hopeful that his peace offering would be accepted. He told me of his route of travel, and that he would be fifteen sleeps on the way home. Taking a small memorandum book from a parfleche, he showed me where he had six straight marks and then a cross for Sunday. He told me he did not want to start on his trip home on Sunday, and wished to know the day of the week, as he had lost his reckoning. I put

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him right, and he said he would start on the following Monday.

"His buffalo were doing well, and were becoming quite docile. All preparations were made for his departure, and he talked hopefully of getting safely across the mountains. He always impressed me as being an Indian of marked determination, and at no time did it occur to me that he would not succeed in his effort.

"On Monday he bade me a cordial good-bye, passing out, his wife and pack horses in the lead. They had discarded the travois with which they usually traveled, saying they could handle the buffalo better with her as a rider. Sam brought up the rear, the buffalo following the pack horses. The three bulls were head and foot hobbled, the four heifers loose; seven head in all is my recollection of the bunch.

"Of the trip to the Teton River, to the Sun River, to the Dearborn and up that stream to the Cadotte Pass I have heard no word; of the crossing of these streams at this season, of the trip over the main range, down the Blackfoot River, all trace is probably forever lost. Through Indian sources I afterward learned that on the way over by some accident one bull became disabled and died. Sam arrived safely in the Flathead without

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further accident to the other buffalo. I also learned, through Indian sources, that immediately upon his arrival upon the reservation he was arrested and severely flogged, by order of the soldier band of his own tribe of Indians. As I understood the story, Sam had no time or opportunity to meet the Fathers and tender his peace offering.

"In course of time I heard of Sam's death, not in battle as a warrior, but passing away peacefully in his lodge or cabin. His wife followed him some time after."

From Pablo and his wife it was later learned that Sam returned to the Flathead about 1878, bringing with him five or six buffalo. They knew nothing of the flogging.

Sam ranged his buffalo ten miles below the St. Ignatius Mission, between Crow and Post creeks. Pablo knew little of his life.

In 1882 or earlier, Charles Allard and Michel Pablo bought the buffalo of Sam. There were said to be, then, fourteen head, but the number of bulls and females was not recalled. There were still buffalo on the plains, and they did not possess the interest they had later. Sam lived on Crow Creek until 1886, when he died. He left a few head of horses and very little property. His Blackfoot wife, who made so much trouble on the plains,

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afterward married a mixed blood named Alex Finlay. Sam died a good Christian, and his regard for Christian teachings saved the buffalo. The widow died in 1901.

The report by J. B. Monroe of his visit to the Pablo ranch is in substance as follows:

In the spring of 1902 the Pablo-Allard herd of buffalo consisted of about 360 individuals, divided as follows:

| | |
|----------------------------------|-------|
| Full-blooded buffalo | 300 |
| Half-bred buffalo | 60 |
| Quarter buffalo | 1 |
| | <hr/> |
| | 361 |
| In 1898 the calves produced were | 48 |
| In 1900 | 50 |
| In 1901 | 50 |

It will thus be seen that the increase was very rapid, and by proper attention and the frequent renewing of blood the herd should last and grow. The heifer drops her first calf at three years old and breeds thereafter for many years.

Michel Pablo was a half Blackfoot, half Spaniard, and was born on the Great Plains. When he was quite young his parents moved to the Colville Reservation. His early life was one of hardship

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and rustle, and he knew every phase of western life.

About 6 feet 2 inches in height, weighing about 240 pounds, without any spare flesh, active and pushing, he seemed in 1902 a man thoroughly awake and alive to all business ventures. His ranch was run like clockwork. Everything denoted push and progress. He had an elk park of twenty acres in which were two cows, two bulls and one last year's calf. He had some wild geese, and some queer-looking hybrid geese around the house.

He told of having had a white mountain goat which would get upon an ordinary rail fence and walk the top rail for a quarter of a mile. One day some hounds caught it away from home and killed it.

In 1902 Pablo owned one half and the Allard estate the other half interest in the buffalo. There was then great danger of the herd's being divided and scattered (or one half scattered), as one of the Allard boys insisted on being a Wild West showman and was rapidly getting rid of his portion of the herd.

The Lower Flathead Valley, or Flathead Indian Reserve, was the range where the buffalo were kept. On the north is Flathead Lake; on the east the high snow-capped Mission Range; on the

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west the Bitter Root Range. The valley seems to be surrounded by high mountains. At the eastern part of the valley, at the foot of the Mission Range, are large forests extending out several miles into the level part of the valley. The Pend d'Oreille River runs through the western part of the valley, and between the river and timber are from ten to twenty miles of the finest grazing prairie country in the West, comparatively level, with occasional hills rising abruptly and forming small round buttes. Several small creeks come down from the Mission Mountains, and flow west across the valley and empty into the Pend d'Oreille River. The valley is about thirty-five miles long and from ten to twenty miles wide.

About ten miles below Flathead Lake, on the west side of the valley, and bordering the Pend d'Oreille River, was the range of the buffalo. The summer range was on the bench land and about five miles east of the river. It was an ideal spot for this remnant of the greatest of American game. The range was rather short, but the buffalo seemed in better flesh than either horses or cattle.

Their winter range was on the low bald mountains west of the Pend d'Oreille River. In December the buffalo commenced the change from their summer range in small bunches. They swam the

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river of their own accord and took up their winter range on the bald hills bordering the west side of the river.

The snow was sometimes very deep in the valley, and all domestic stock was fed; but it was not so with the buffalo. In the coldest weather they were found bedded down in the snow with their heads to the wind, and seemed to be contented. A buffalo keeps his head to the storm; all other stock turn tail and drift with it. Sometimes the thermometer dropped to thirty degrees below zero, but the herder said he had never seen a buffalo which seemed to be cold.

When the snow went in the spring and the ice went out of the river, the buffalo came to the stream and swam back to their summer range. Sometimes a small bunch was slow in coming, but when the herder gave them a start toward the river, they kept on until they reached the summer range. They were handled about like range cattle; the so-called herder was merely a range rider, although everybody there called him the buffalo herder.

TAME BUFFALO AT HOME

In his account Monroe said:

"The herder, Jimmy Michel, a very intelligent mixed blood, took me out to see the buffalo. We

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were riding for several hours, and he gave me a chance to see about two hundred buffalo. From a high butte a number of small bands could be seen, while close to us, stringing out in single file and coming to water, was a herd of about one hundred. The day was calm and warm, and we lay in the sun on the butte and watched the buffalo come in to water. Sometimes a cloud of dust would rise from around a water hole, and an old bull would be seen horning the ground and throwing up the dust in the air.

"Jimmy told me of a cow and calf which stayed on the winter range until late. One morning she came to the river with a calf not over twenty-four hours old. They took the water without any hesitation. The river at this time was high; it ran like a millrace, and was a quarter of a mile wide. The calf swam easily under the lee of its mother, and landed without apparent exhaustion. The same swim is a hard job for a fat strong saddle horse.

"With the herder I rode down off the butte, where we had lain watching the herd. There were about one hundred head close by, and they were slowly grazing away from the water. We approached, giving the buffalo the wind. When we were within 300 yards of them they threw up their heads and came for us on a gallop. They gathered

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around us, snuffing and looking, the yearlings bucking and playing like domestic calves. We stood still and watched them. Most of them were within 40 to 80 feet of us; a few old bulls were strung out behind, and they slowly came on, in our direction. There was no sign of fear or wildness; there was no indication of bad temper; just good-natured curiosity and playfulness. We rode off and left them standing, looking after us. The cows were commencing to shed. All looked in good flesh and thrifty. Not so with the range cattle close around, most of which were poor and had a distressed look after being fed hay for two months.

HABITS

"Accounts differ somewhat as to the temper of buffalo. Mr. Ford, who manages Mr. Conrad's herd, told me they were as easily handled by an intelligent man as a bunch of cattle. Mr. Pablo, who drove a part of his herd to Butte for exhibition purposes, said that as soon as they were out one or two days, they handled fully as easily as domestic cattle. They were bedded down at night on the open prairie, and were a great deal easier to night-herd than ordinary stock. A buffalo would rise in the night, feed close to where he had been

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lying, and again lie down. Domestic cattle will attempt to graze away from the herd.

"In the rutting season the bulls fight, and then all agree that it is best to leave them alone. I failed to get any story of anyone being hurt by a buffalo. Sometimes a bull is seriously injured in a fight. At this season domestic bulls leave them alone. The buffalo usually wins a battle with a domestic bull very easily when weights are even. During the rut the bulls are self-willed and hard to manage, but everyone seems to believe that at other seasons they are no more dangerous than a band of range stock. I stood in the Conrad inclosure, and two old bulls fed up to within forty feet of me. They had the wind of me. One young bull took some notice of me, but the others merely turned somewhat from their course and grazed past. No buffalo of either the Pablo-Allard or Conrad herd are branded.

"Pablo told me of a buffalo bull which fought for three days with a large muley polled angus bull. They would fight until tired out, then rest and renew the conflict; the buffalo finally won the battle.

"The herder told me of one cow which—when her calf was very young—always came out and chased him and his horse for several hundred

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yards. Sometimes she gave him a hard run to get away. After a few days, she was all right again.

"The bulls fight much as do domestic cattle. The herder told me that when one bull got the advantage, and the other turned to run, the stronger bull would lunge viciously, and often tore the other in the flank or hindquarters.

"When the Buffalo Jones herd and the Pablo herd met in Butte, there was plenty of fighting, but no serious results. I did not learn at what season this meeting took place. Pablo and the herder said the bulls—in season—were continually fighting.

"Mr. Ford, of Conrad's herd, maintained there was no fighting at rutting season. A bull would cut a cow out of the herd and drive her off to some other part of the pasture.

"Mr. Ford said that a cow in calving gave no sign, as usually shown by domestic cows. She would be uneasy and restless; then she would leave the herd, and in two or three hours come back with a calf by her side.

"The Conrad herd are kept in confinement. There are double the number of cows to bulls, which may account for the absence of fighting at the rutting season. They were changed from their range, where they were as free as it is possible to

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be in these days, to the Conrad enclosure. This was all done, and the actions of the herd noted, in one year. Mr. Ford said he never saw one seek the shade. In the hottest weather they go up on the top of the hill. There are plenty of large pines and considerable brush in the pastures. Mr. Ford said they seemed to avoid both. A mother never cached her calf. It was always under her eye."

Since about 1900 Michel Pablo had been anxious to get rid of his buffalo herd, or, if not to get rid of them, at least to find for them a place where the constant expansion of the herd could be provided for. People were coming into the Flathead Reservation to settle and there was constantly less room for buffalo range.

At one time he hoped to sell the herd to the United States Government; but he never received encouragement that Congress would provide for their purchase. Later, he is said to have appealed to the Canadian Government to see if he could not secure a large pasture somewhere in western Canada. Finally he offered to sell the entire herd to Canada.

Hon. Frank Oliver, then Minister of the Interior for the Dominion, had long been interested in the preservation of wild life, and had set aside many national parks and reservations in Canada.

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He finally arranged for the purchase of the Pablo herd, the greater part of which was finally rounded up and delivered in Canada,—the total number of buffalo delivered by Pablo from the year 1906 to 1912 being over seven hundred. There are reported to have been about seventy-five animals which it was never possible to gather and which, for some years, were scattered over the rough mountains to which they had escaped. Some of these were killed, and now apparently no one knows just what finally became of them all.

The work of gathering the Pablo buffalo was long and difficult. The best riders were gathered from the whole neighboring west; but notwithstanding all efforts, the labor of bringing in the animals was enormous and it is said that the best riders of the Flathead Indians, the best white cowboys of the neighborhood, and the best riders of the Blackfeet Indians were thoroughly worn out before the work was accomplished.

Besides these seven hundred and ten or twelve buffalo that were delivered by Pablo, the Dominion already had a small herd of buffalo at Banff.

The Pablo buffalo were delivered at Elk Island Park and at Wainright in the province of Alberta. The areas in which they are confined are large,—that at Wainright, called the Buffalo Park, having

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an area of a hundred and sixty-two square miles, while the other is still larger. In addition to these animals, the Canadian Government purchased, about 1910, thirty animals from the Conrad herd at Kalispell, Montana.

The reservations in which the buffalo are confined are carefully watched to protect them from fire; and a large amount of hay is raised for winter feed. The herd, from about thirteen hundred in 1913, is said to have increased now to more than eight thousand animals. The increase is rapid, and after a while the Canadian authorities will be somewhat at a loss to know what to do with their buffalo. In fact, it was reported in 1923 that they were considering selling some thousands to be butchered for food.

YELLOWSTONE PARK HERDS

As already stated, Howard Eaton, in the winter of 1902 and 1903, sold to the United States Government eighteen buffalo cows from the Allard herd and three bulls from the Goodnight herd; so that the tame herd was started with twenty-one animals. Its history from that time to the present is told in the reports of superintendents of the national parks.

Colonel Pitcher's report for 1903 states that

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seven calves had been added to the herd, two of which had been captured from the wild herd that year. The tame herd thus had now three strains of blood—that of the Allard herd from the northern plains, of the Goodnight herd from the southern plains, and of the park wild herd, which consisted of what old hunters used to call the “mountain bison.”

In 1904 the herd had increased to thirty-nine, of which twelve were calves born in the herd and one a calf captured from the wild herd. There had been one death. In 1905 the tame herd numbered forty-four, and in 1906, fifty-seven; while in 1907 there were sixty-one and in 1908, seventy-four. The increase in calves was satisfactory, but there were some deaths among the older animals.

The herd contained 95 animals in 1909, and 121 in 1910, and by 1911 had grown to 147.

In 1912, however, there was a setback, the herd having been attacked by hemorrhagic septicemia, which caused a loss of twenty-two animals. Vaccination by officials of the Bureau of Animal Industry was undertaken, and was followed up in later years. Then, too, the increasing number of bulls was given serious consideration and the superintendent suggested that some means of disposing of these extra animals be considered. From

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then on, this matter continued to attract attention; but for some years no action was taken to give practical effect to these recommendations.

In 1914 there were 193 buffalo; 239 in 1915; 276 in 1916 and 330 in 1917.

Some time before this the main herd had been moved to a new buffalo range on the Lamar River, and only a show herd consisting wholly of bulls was kept under fence near Mammoth. There had been occasional deaths through all these years; and in 1919 came a second outbreak of hemorrhagic septicemia, which caused a loss of forty or fifty animals. At present the young stock is being vaccinated each year against this disease, and this causes some accidents and some slight loss. A large amount of hay is cut each year for the buffalo, and this is very necessary because every now and then a severe winter comes when, during the deep snows which fall on the Lamar River and in the surrounding mountains, food is hard to get.

The record of the births of calves in this herd, so far as it has been kept, seems to show that a slightly greater number of males are born than females. For this reason the problem of the bulls continues to trouble and, as the years go by, the handling of these animals will become more and more difficult.

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For the last few years, it has been the practice, in handling the tame herd in Yellowstone National Park, to castrate 40 or 60 per cent of the male calves born each year. These steers are readily recognizable to the eye, for they are slighter in frame than the buffalo bulls, and have notably straighter horns. The rangers who handle the buffalo say that they are light and active on their feet and are much given to fighting. They wound adult buffalo, and from time to time stab calves with their horns.

These steers should be disposed of year by year. They are altogether useless and a danger to the breeding animals. They might properly be sold for the meat and skins that they would furnish, and the money received for them applied to the care of the buffalo. Retained in the herd, they do only harm; they should be got rid of at once. In 1923 Congress authorized the Secretary of the Interior to dispose of surplus buffalo, which thus removes one danger to which the herd is exposed.

During the last twenty years, the wild herd has steadily increased. Since its members are actually wild and very suspicious, it is impossible to count them exactly; but in 1901 Colonel Pitcher estimated that they were only twenty-five. Yet in 1910, twenty-nine wild buffalo were counted in the

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Pelican Valley; and in 1912, forty-nine were seen, of which ten were calves. In 1916, seventy-two wild buffalo were seen at one time; and in 1920, Mr. Albright expressed the opinion that the wild herd contained well over one hundred individuals.

The herd of buffalo in the Wind Cave National Park numbered ninety-two (1923). It had its origin in fourteen animals, donated by the New York Zoölogical Society through the American Bison Society in 1913; and these animals, shipped by the Zoölogical Society from New York City, reached their destination at the end of November, 1913. This group, like all the other herds of buffalo that are fairly well looked after, is sure to increase, as have all the other herds in captivity.

The group on the Bison Range near Ravalli, Montana, has increased from small beginnings until now it numbers more than five hundred individuals. It has been cared for by a man interested in his work. It is of this group of buffalo that the story is told of a mighty polled Angus bull that approached the fence about the range, near which was standing a buffalo bull. There was threatening by the domestic bull, responded to by the buffalo, but for a time nothing happened. Then suddenly, and without warning, the buffalo, which had drawn back a little, charged the polled Angus, passed

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through the tough wire fence as though it had not been there, and struck his enemy in the shoulder and side. The domestic bull fell and died almost at once; and the buffalo, after looking at it for a few moments, turned about and walked back through the hole in the fence into the preserve on the other side.

As already noted, the New York Zoölogical Society, in the year 1906, presented to the Secretary of Agriculture, from the surplus of its herd at the zoölogical park, fifteen buffalo for introduction on the tract of land in Oklahoma now known as the Wichita Game Preserve.

At the time some anxiety was felt by wild animal experts lest the buffalo of this herd should become infected by Texas fever, which had proved a very real danger to the domestic cattle of the Southwest. Extraordinary precautions were therefore taken to protect the buffalo. They were sprayed when first put in the enclosure; and the long grass along the edge of the fence was burned, so that every known precaution was taken to protect the animals. Although two buffalo are believed to have been lost from this cause when the herd was first established here, the disease never made any headway among them. They have done very well indeed, and in October, 1921, were reported to num-

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ber a hundred and twenty-nine. Besides the buffalo in this preserve, there are more than one hundred and twenty-five elk, many deer and turkeys and, at last accounts, four antelope.

The Wichita Game Preserve has been shipping buffalo away to different cities and parks, and within two years has sent away twenty-seven head.

PRIVATE HERDS

"Scotty" Philip Herd, South Dakota

This herd was the property of the late James M. Philip, a Scotchman who was an early settler in Dakota. He married a daughter of Fred Dupré, an old Frenchman who had an Indian family. D. F. Carlin, a son of General Carlin, U.S.A., married another daughter.

Dupré, perhaps in 1882, captured four or five wild buffalo calves about a hundred miles west of the Cheyenne River Indian Agency on the Missouri River in South Dakota, and ranged them with his cattle. The calves did well and increased and, at the death of Dupré, about 1900, there were between fifty-five and sixty buffalo. On the death of the father, the herd was divided between the two daughters and, a little later, Philip bought her share from his sister-in-law, and so the whole

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herd came under his control. Somewhat later, a few other buffalo were bought so that, at length, the Philip herd numbered ninety-two.

In the year 1906 Congress passed an act authorizing the Secretary of the Interior to lease to Philip not more than thirty-five hundred acres of the public land in Stanley County, South Dakota; and under the authority of this act the Secretary leased him sixteen hundred acres and subsequently renewed the lease for ten years. The report which accompanies the original bill seems to show that in 1906 there were more than a hundred head of buffalo.

Since that time the herd has increased rapidly; and the census of the American Bison Society shows that in 1916 its number was 600 head; in 1918, 700; and in 1920, 825.

After Philip's death, his Indian relatives, in some form or other, became interested in the herd; and it is said that for some time the banks at Fort Pierre held mortgages on most or all of these buffalo for loans made to the Indian heirs.

The Trinchera Herd, Colorado

The buffalo herd on the Trinchera Ranch is of comparatively recent origin, having been purchased from the Goodnight herd in Texas by Mr. Chester

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A. Arthur about 1910. It was a mixed herd of seventy-five head and was intended as the nucleus of a large game preserve to be organized by Mr. Arthur and his associates. A game park was built and the buffalo driven over the trail from Texas to Colorado. They did very well in the park provided for them, but Mr. Arthur's plans were never carried out, the property being eventually sold to the present owners to be utilized as a cattle ranch.

The park as originally built has been maintained, but the increase in the buffalo herd has been turned out each year on the open range in order that those that remain in the park may have sufficient grazing. The increase of the herd has varied and no effort has been made to keep an accurate count or get an average percentage of the calf increase from the cows of breeding age. The opinion of the cattle foreman is that the increase would average about 45 per cent of the cows of breeding age. From this increase, or from the aged bulls, a number have been sold for beef and for breeding purposes. The breeding stock has been placed over a wide territory, mostly in pairs, while the use of the butchered buffalo has been almost entirely confined to local territory.

Of the buffalo turned out on the open range, many have strayed over the mountain range to the

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government forest reserves, while some have undoubtedly been killed by hunters. The remainder of the herd are either running in the game park or on the Trinchera lands. These should number about one hundred head.

Antelope Island Herd

The herd of buffalo on Antelope Island, which figured prominently in the newspapers in the autumn of 1920, was established by the late John E. Dooley about the year 1900, and is still maintained on Antelope Island.

The origin of the stock and the approximate number purchased by Mr. Dooley are not known.

The reports of the Bison Society said that in 1908 there were 45 head; in 1911, 120; and in 1918, 300; but in November, 1920, there were said to be only about 235 head.

This is presumably one of the herds which, like some of the other groups of domestic buffalo, have been treated commercially,—the numbers rising and falling as animals were sold, or the natural increase was retained.

Until recently, the herd on Antelope Island belonged to the Island Improvement Company, of which John E. Dooley, Salt Lake City, son of

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the founder, was manager. It is reported that a few years ago a tax was imposed on the herd by the state of Utah.

Within a year or two the Island Improvement Company leased Antelope Island for stock raising purposes, and sold the buffalo to the lessees. In 1920 the lessees wished to reduce the herd of buffalo, and announced that sportsmen would be taken to the island and each one permitted to kill one buffalo at a fixed price. This announcement was taken up by the newspapers with considerable interest, and unfavorably commented on, and only a small number of buffalo were killed.

Trexler Herd

General Harry C. Trexler, of Allentown, Pennsylvania, has a game preserve near that place on which there are about eighty head of buffalo, all in excellent health and condition. General Trexler states that this herd was started in 1911 when he purchased one bull and two cows from the Blue Mountain Forest Association of Newport, New Hampshire. In the spring of the following year he bought a cow and a bull from the Horne Zoölogical Arena, Kansas City, and two more cows from the Blue Mountain Association. Later, a bull

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calf and a heifer were purchased, also from the Blue Mountain Park. In January, 1915, General Trexler's herd numbered eighteen; in 1918 there were forty-nine; and in 1920, sixty-three. General Trexler has sold none of his buffalo but has lost some by death.

Conrad Herd

In the spring of 1901, the Conrad Brothers, of Kalispell, Montana, purchased some buffalo of the widow of Charles Allard. They were bought as a business venture, and were at first kept near Kalispell in an enclosure of two hundred and forty acres. The fence which enclosed them was about five feet high, with one wire at about three feet from the ground. The same fence would be required for domestic stock. The herd consisted of thirty-six full bloods. The number of calves born in 1901 was nine.

For more than twenty years, this herd, closely and judiciously looked after, has done well and has steadily produced. It has been run, from the first, on a commercial basis, and has been profitable. Frequent sales have been made of small numbers; but in 1909 there were sold to the American Bison Society, thirty-four; in 1910, to

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the Canadian Government, thirty; and finally, in 1921, the whole remaining herd, consisting of ninety animals, was sold to the Gibson Brothers, of Yakima, Washington.

One secret of the great success in handling these animals is that, from the first, they have been managed quietly and carefully. They long ago lost all fear of human beings; but, on the other hand, they have never become domesticated in the sense that they could be handled.

The well-being of the herd and the success which has attended their handling are shown by the fact that in 1921 the increase was twenty-three calves out of a possible thirty-four breeding cows.

We hear much talk about the supposed need of new blood for groups of buffalo under fence, and the danger of their inbreeding; but the Conrad herd has never had new blood introduced, and yet the individuals of the herd are thought to be better, stronger and slightly larger than when the herd started. It may be pointed out that the wild cattle at Chillingham, England, show similar conditions.

Lillie Herd

Gordon W. Lillie, better known as Pawnee Bill, has now at his ranch near Pawnee, Oklahoma, a

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herd of about thirty buffalo. He procured his first buffalo about 1888 from C. J. Jones, of Garden City, Kansas; and, at different times, has had ninety-five or a hundred head on his place at one time.

His first buffalo are supposed to have been procured for use in his Wild West Show; but finally they were taken out to Oklahoma, and some animals have been added to it from time to time, and others have been sold. Mr. Lillie has probably sold from his herd first and last two hundred head of buffalo, which have been widely distributed.

Blue Mountain Forest Herd

The bison herd in the Blue Mountain Forest, New Hampshire, was established by the late Austin Corbin, who in 1888 purchased twenty-one buffalo from C. J. Jones, then at Garden City, Kansas; and in 1890, nineteen from Colonel William Root, at Laramie, Wyoming. To these were added others, until in 1896 the herd, including the natural increase, numbered seventy-five.

In October, 1896, twenty-five were shipped to Van Cortlandt Park, New York City, where a special enclosure was prepared for them. This herd became diseased, and in two years the sur-

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vivors were returned to New Hampshire, where eventually all died. These animals were never returned to the main herd, and the disease was not communicated to it.

The fifty left in New Hampshire increased to about two hundred, when, because of shortage of good feeding ground in the Blue Mountain Forest, and the expense of maintaining the herd during the winter, its numbers were reduced. In 1911 it numbered about one hundred and consists now—1921—of but eighteen head. The birth rate was constant and satisfactory, and the health of the animals excellent.

From April to October the bison grazed over the fields and pastures in the forest; but in the winter the herd was driven into paddocks and fed hay, the young being given a little grain in addition. They were kept in until the calves were born in April. The coarser the hay, the better it seemed to agree with them. About three tons per capita was required.

Fresh stock was introduced from time to time, to avoid any danger from inbreeding, and the old bulls were disposed of. Previous to 1910, bulls were purchased from New Mexico, from Banff, Canada, and from the estate of the late William C. Whitney, in Massachusetts. All the animals in

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the Blue Mountain Forest herd are pure bred, and the Association has exercised the greatest care in the selection of new stock. It has furnished bulls for the Montana Bison Range and the small nucleus herd on the Pisgah Game Preserve in North Carolina.

Miller Brothers Herd

For some years past, the Miller Brothers of the 101 Ranch, at Bliss, Oklahoma, have owned some buffalo. Of these, thirty-five came from the Allard herd in Montana, about 1904; twenty-two from Glen Island, New York—the Starin buffalo—about 1907; and a few single animals from other places. In 1920, they shipped in twenty head of cows from Colorado, presumably from the Trinchera herd. In 1920, they had seventeen head of calves, but lost them all. That summer, it is said, there appeared “a pest of grayish colored grass flies,” new to that country; and the owners believe that through the attacks of these flies they lost their calves, and their buffalo herd was reduced to thirty cows. Last season only two calves were born, and in April 1922 the Miller Brothers had thirty-two head of buffalo,—twenty-nine cows, one bull and two calves. Yet in the eighteen years that this

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firm has handled buffalo, they have probably purchased more than seventy-five head.

One important herd of buffalo is maintained in a state game preserve—that of Custer County, South Dakota. This preserve or refuge includes more than 61,000 acres and is enclosed by a wire fence about forty miles long. In the autumn of 1914, thirty-six head of buffalo were purchased from the Philip herd; and in 1915, some elk were introduced from the Yellowstone Park. In June, 1921, the buffalo had increased to seventy and the elk, which had been added to from time to time, numbered about five hundred.

On the Niobrara Reservation in Cherry County, near the town of Valentine, Nebraska, is the only herd of domesticated buffalo representing the gift by a single individual to the government. Sometime during the year 1912, Hon. J. W. Gilbert, of Friend, Nebraska, offered to the Department of Agriculture a number of buffalo, elk and deer on the condition that they should not leave the state. The Niobrara Bird Reservation seemed to be the only place where they could be put; but this was unfenced. However, funds for fencing 240 acres were contributed by the citizens of Valentine and by the National Association of Audubon Societies,

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and the animals—including six buffalo—were transferred to the enclosure, and arrived there in the month of January, 1913. The following spring two male calves were born, and the same year two young bulls were introduced there from the Yellowstone Park. In January, 1915, there was a loss of one calf, and that spring one calf was born. Unfortunately these calves were all bulls; and in January, 1916, the herd numbered eleven head, of which six were bulls. The buffalo in this herd are said to have been obtained originally from C. J. Jones, of Topeka, Kansas.

The census of the buffalo in captivity as of January 1, 1923, was 11,332. Of these 3,753 were in the United States and 7,579 in Canada. Besides these are the wild herd in the Yellowstone Park and the wood buffalo of Canada—sometimes called the Peace River herd.

The increase of the captive buffalo is very rapid; almost 2,000 calves annually, it is said, for Canada's great herd. Including the wild bison and the tame, therefore, we may conjecture that there are somewhere near 16,000 buffalo on the continent today; probably more rather than less.

Geo. Bird Grinnell.

Hunting in the Nutzotins

On the river steamboat coming up the Yukon in October, 1919, Charles Blaker, one of a party of Dawson mining men, told the story of an old prospector he had grub-staked two years before.

"He started for the Stewart River Country in 1917," said Blaker, "with a little grub, one blanket, a gold pan and a .22 rifle. He intended to return in the fall by crossing to the head of the Klondike and rafting down that river to Dawson, but when the freeze up came there was no sign of the old chap and as he was over seventy years of age it was generally thought he had made his last trip and cashed in.

"The winter passed and the summer too and the old fellow had been forgotten but in the fall of 1918 to everyone's surprise he turned up again in Dawson. He reported that he had made no strike, but had a great trip. Branches of the Stewart, the Wind River and the Klondike all head close together and in going round the corner of a mountain he got on the wrong watershed. He built a

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raft of dead spruce and floated down a stream a long way before he realized his mistake. Then he heard a roaring of the water and just succeeded in jumping off with his gun and blanket before his raft went over a hundred foot high waterfall.

"The Klondike has no falls, so he knew he was on another river but what river it was he had not the faintest idea. It was easier to drift down stream than to climb back up hill and so he kept going knowing in the end he would come out somewhere. He jerked together a new raft but lost it at another waterfall and had to build a third.

"The old man had plenty of .22 ammunition and he lived chiefly on 'chickens,' ducks and a few rabbits. He had opportunities to kill moose but made no attempt because he was provident and would not waste meat and he did not want to stop long enough to jerk it because it was a toss up whether winter or he would get there first. But he beat it out, and reached Fort McPherson on the Mackenzie the day the mush ice jammed for keeps.

"He wintered with the police at McPherson and in the spring got a lift over Rat Portage and down the Porcupine as far as Fort Yukon. Here he met an acquaintance, a Dawson school teacher, and struck him for the price of a steamboat ticket home, which he did not get. There was an up river

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boat at the dock and as luck would have it the old man and the school teacher got there together but our man happened to spot the captain first and he told him his story. 'Whether your boss pays me or not, you ride,' said the captain, and he told the purser to let the other fellow walk, so the old man got back to Dawson one boat ahead of the school teacher.

"Along about the first of June this year the old prospector disappeared again and was gone until October. I met him on the street just before we left Dawson and asked him where he had been all summer and what do you suppose he said? Said that the year before when he got twisted going around that mountain to find the Klondike he'd left his pipe in a tree and he had gone back to get it. Thought a lot of his old pipe he said and besides he was curious to see just how he got turned around. This time he found the right river and got back on schedule and he had the pipe to prove his story."

Back in the Klondike days of 1897-1898, I had been on the Yukon and had heard of the game fields up the White River behind the St. Elias mountain range. I had also been told by men who had tackled it that the White was a bad river. What I heard interested and fascinated me. So

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twenty-odd years later I went up the White and hunted a part of the game country. I had left no pipe in a tree but I had an equally good excuse for going back, for the north country called!

The St. Elias mountains are a mile higher than the Alps. They have single glaciers containing more ice than is found in all Switzerland. The White River carries the drainage from the inner side of the range. It is a true glacial stream and is the only river in the Yukon watershed not commonly used as a route of travel by Indians and prospectors. It took Ernest Mussen and myself twenty-six days of the hardest kind of work to ascend the White one hundred and fifty miles to the Lower Cañon. In making this distance we lifted our twenty-five-foot poling boat, which with supplies weighed a thousand pounds, nearly fifteen hundred feet vertically. This was in August, 1919, and that year the high water came late.

The Cañon, which is formed by the passage of the river through the Nutzotin Mountains, is seven or eight miles long. Near the middle of this distance important stream valleys run back into the mountains on both sides of the river. We decided to stop at the foot of the valley on the left or south side and establish a camp from which as a base we could explore the mountains on both sides

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of the river, using the valleys as routes of travel. But while this plan was carried out we made our trips from a different base, because before reaching the more ideal site we had a little accident resulting in the swamping of our boat. We established a camp on a bar under the cañon wall for the purpose of drying out our supplies and duffle and as the place was reasonably convenient the bulk of our outfit was left there.

The accident, like most other accidents, might easily have been avoided. We tried to line around a point of rock in deep water when we should have made a crossing to the opposite bar. The boat turned over one and a half times, but as our supplies were lashed in we lost nothing of major importance, and simply had the trouble of drying out the stuff. True we had to go without baking powder and tobacco for a while, but the food taken on such journeys is of a kind that is not seriously hurt by a wetting provided it is dried out promptly afterward.

We began drying our outfit the afternoon of the accident, but two more full days were required to complete the work. Clothing and blankets came through of course in much less time. The articles were hung on racks of poles around two fires and were soon in usable condition. For drying our food

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supplies, however, we had to depend mainly on the sun and wind. Beans and rice and dried fruits and the other things were spread out on tarpaulins as thinly as possible and stirred at times to expose a fresh surface to the air. Flour requires no drying because it does not absorb moisture except for a thin outer skin which automatically protects the contents of the sack. Oatmeal presents the worst problem. It has to be separated into sticky chunks which never dry sufficiently, with the result that before long the oatmeal is rancid. Mussen attended to the drying the first day and I took a twenty-five-mile hike to look for hunting grounds south of the Cañon.

There are no good maps of this section, though there is a small area north of the Cañon that is well mapped. The official Canadian map of the White River shows an extensive swamp on the south side of the Cañon. Instead, as might be expected, the country is mountainous. Several parallel ranges over five thousand feet high running in a southwesterly direction form a southern continuation of the Nutzotins. The central valley in these mountains is drained by a stream perhaps thirty miles long which, as we afterward found, is called Hazel Creek. It was at the foot of this valley we had intended making our base camp.

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On this day I followed the White River west almost to the mouth of the creek before striking up the valley and soon became involved in the cañon of the stream. In the first mile or two it was necessary to ford the creek fourteen times. The water was high and the rocks very slippery and twice I lost my footing. Finally, at seven in the evening, I reached the forks of the creek and found a good location for a hunting camp. I had seen the tracks of a large band of Osborn caribou heading toward a mountain to the west and also some remains of *Ovis dalli*, which showed that sheep were in the immediate neighborhood.

It was one o'clock the following morning when I reached our camp on the White. Mussen had left some supper at the edge of the fire and after I had removed my wet clothes and had a rubdown and put on dry things I did full justice to the meal. When I crawled into bed Mussen roused sufficiently to say it would take another day to dry the food. I told him I would look after camp and that he could go out on the flat below the Cañon and kill a moose for meat. Mussen when at home is one of my employees, serving as foreman.

On waking the next morning I found that Mussen had already breakfasted and left camp. Along in the afternoon he returned with half a cubic foot

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of liver and the heart and head of a very fair bull moose. After congratulating him on his success I said, "Ernest, why did you bring in all that liver?" "I did not bring all the liver," he replied, "that liver would fill a wash tub!" It was Mussen's first moose and he was duly impressed by its size, but fresh meat would have looked better, even if it had proved to be tough.

The day after Mussen killed his moose an incident happened which illustrates two methods of finding places in the wilderness which have not been tied up to natural features or otherwise marked. These are by memory, which is the Indians' common resort, and by instinct, or reliance on the subconscious mind. Man at some stage in his development no doubt was endowed with as sure a sense of direction as the homing pigeon, but as the self-conscious mind developed it was natural that he should rely less on the innate faculty and cultivate something more amenable to his will. Few Indians ever forget a route they have once traveled and the hunter returns to his kill by the simple process of retracing his steps. Civilized man relies on reason, and disdains to call on the ghost of his heredity, so that the sense of direction in man today is rarely more than a fitful recurrence of his original endowment.

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We were taking a rest in the burned country when Mussen, looking over the five-mile-wide flat of the Koidern River below, thought he recognized the spot where he killed his moose. He pointed to one of several poplar belts running through the spruce timber and then to a more open place beyond and as the distance was not much over two miles we decided there was time to get some meat and still make camp at the forks of Hazel Creek that night. We accordingly left our packs and started down the long slope for the meat.

When we got to the place, however, no moose was in evidence. Mussen was like a hound who has lost the scent. He cast around in different directions, but could find nothing that "looked natural." Eventually he admitted that he was mistaken in the place.

We had come far and were "meat hungry" and so Mussen kept up the search. Along in the afternoon he found a place he recognized having passed over before he killed the moose. Carefully he followed his route, which zigzagged as his hunting course had taken him. Occasionally he found a stick his foot had misplaced the day before, but for the most part his trail ran over thick moss that retained no impression. Every willow spruce or poplar he passed had a meaning to him, and when

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he finally came out in a sparsely grassed opening he told me the moose lay in the spruces just beyond. The country was just like the first place he had indicated but it was five miles from our packs instead of two and by the time we had the meat cut off and were ready to return it was seven in the evening and almost night.

It soon grew dark and while the night was clear there was no moon. I took the lead on the return and kept it till about ten o'clock when, getting tangled up in the slash, Mussen came in ahead. Shortly afterward I stopped and told him he was bearing too much to the left. "That can't be," he said. "Do you see that burned spruce with the broken top? We passed that on our way out." "I don't remember it," I said, "but I have no doubt you are right. We passed it at a different angle though because the moose was further south than you at first thought." "If you don't remember the tree how do you know the packs are to the right?" asked Mussen. I told him I had put reason aside and was relying solely on instinct. I also told him we could not afford to pass by the packs as, if we did, we should certainly not find them that night. Even in daylight in that great sweep of burned country it would be hard to locate them because every part of it had a family resemblance to every

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other part and there were no landmarks. It ended by Mussen going his way and I going mine.

Mentally I had to admit that the place did not look right. The slope seemed steeper than it should have been and large boulders appeared to be more common. Realizing, however, that doubt was fatal to success I resolutely put everything out of my mind except the thought of the packs and the supper and comfortable night's rest that their recovery meant, and twenty minutes later I found them through the process of falling over one in the dark. Children have the instinctive sense of direction and their elders often can apply it if they will copy the same simple attitude of mind.

On reaching our hunting locality on Hazel Creek it was Mussen who first discovered the caribou. From a distance, through my glasses, I saw him executing a stalk and after a while found its object, a big bull *Osborni* lying down several hundred yards away. Presently Mussen got down on his belly and wormed along the ground. He was using all the strategy that would have been called into play to circumvent a solitary pronghorn antelope buck on the plains.

Hunting in open country was a new experience for Mussen. He is an expert still hunter of eastern deer, the best tracker I have ever seen and an

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accomplished woodsman, but prior to this experience he had never been more than a hundred miles from his home in the Adirondack section of New York and naturally he thought of other game in terms of white-tailed deer. I had told him that the caribou had little intelligence and but one sense, that of smell, and that as long as one did not hunt from the windward side he could take all kinds of liberties with his game. Mussen, however, wanted the big bull and he was taking no chances.

I ate my lunch during intervals of watching the stalk. A great many caribou were in sight over a distance of two miles both behind and beyond Mussen's position. One bull, a long distance back, appeared to have unusually heavy antlers.

Finally came a puff of smoke and the report of a shot. Instantly caribou began running in every direction. The sky line was full of them. Mussen was now on his feet and still shooting. I started toward him in no very pleasant frame of mind because for a moment I thought he had lost his head and was shooting at everything in sight. While a Yukon license permits the holder to kill six caribou we had mutually agreed to be satisfied with one apiece. When I reached him, however, I found he had fired no shots except at the big bull. The wind was blowing hard and he had done his

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shooting standing erect, the last of it at a distance of nearly six hundred yards. Naturally he had scored a number of misses, despite the fact that the bull registered six hits.

I photographed the trophy and then walked half a mile south to get a closer look at a good one in that direction. I decided, however, that he did not have as distinctive a head as the big bull back toward the river. The caribou had gotten over their scare and were all again peacefully feeding.

On the way back I told Mussen that I proposed to walk right up to the bull in plain sight and kill him. His position was close to the west edge of the mountain, but the wind was from the west and the land to the east was comparatively level with no cover for stalking. Less than two hundred yards to the right of the bull forty other caribou were feeding.

I made a detour so as not to cross the sky line and then walked directly toward the caribou. It was getting late in the day and presently the big bull lay down, his action being imitated shortly after by the other animals. None of them by any indication showed that they saw me until I was within a fair rifle range of the bull I was after. Naturally my attention was centered on him.

I continued to walk forward as he raised his



MIGRATING ALASKA CARIBOU

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head and turned it from side to side to get a better view of me. The distance had shortened to less than a hundred and fifty yards when he got to his feet; whereupon I dropped to one knee and catching the sight at the point of the neck released the hammer. The bull crashed down but his struggles carried him near the rim of the mountain and for fear of having to pack his head up a very considerable bluff I shot him again. As I walked toward the dead bull I happened to think of the other caribou and glanced in their direction. They were all looking at me, but then or afterward no one of them got up. When I left the place after skinning out the bull's head they were still lying down, every one of them within easy rifle shot.

Among the caribou were three good-sized bulls, one of which had a very interesting head. I was tempted to kill him, but, knowing that we could not use the meat, desisted. The next day this band was feeding in plain sight of the bull I had killed. Another hunter, who shot the three bulls, told me that apparently they had not moved from the place occupied the evening before.

The bull I secured had massive horns, the left one measuring eight inches in circumference a foot above the head. In all there were between three and four hundred caribou in sight at one time.

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The first and only party we met on the hunting grounds were the Mitten brothers from Boston with Captain Hubrick. Mussen and I were trudging over the cobbles of Hazel Creek when they came into view, six riders, seventeen horses in all, coming up the creek bed. We shed our packs and stood waiting. My first thought was of tobacco for I had to give up smoking after the mishap in the Cañon. Only a little while before Mussen had remarked: "I wish we would run into somebody with tobacco. It would make you better-natured." Tragedy always results from shipwreck, so far as baking powder and tobacco are concerned, unless these supplies are in hermetically sealed tins.

It was a good-looking outfit that approached, the horses smart and full of pep and everything indicating experienced care. At the head rode a dark-bearded squarely built frontiersman whose hair was beginning to grizzle. As he drew up fifteen feet away I said, "How are you, Captain Hubrick?" Without a moment's hesitation he replied, "How are you, Mr. Burnham?" I recognized Hubrick by pictures I had seen in sportsmen's magazines, but how he knew who I was I never thought to ask.

After introducing Mussen and myself to the sportsmen, Richard and Arthur Mitten, Captain

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Hubrick presented Jimmie Brown, Con Miller and Andy Taylor. Taylor said, "I am sorry I couldn't furnish the horses you wired for to meet you at the Cañon, but I had already promised to go with this party." I then told him that I had been at his brother-in-law's house in Ottawa and knew his sister. This was our introduction to a fine set of men. We were together, off and on, for many days after that, seeing the last of the Mittens when we left the steamer at Ketchikan to return east via the Grand Trunk Pacific, while they went on to Seattle.

I remained several days with the Mitten party and during this time cut a horse trail out of the Hazel Creek Valley in the direction of the White River Cañon. Mussen went over to look for bear at the moose he had killed. He found that one or more had been feeding on the carcass but saw none. While returning to our base camp at the Cañon after dark he ran into a bull and cow moose in the thick timber and fired three shots at the bull. He could not see the animal at all plainly but could hear its horns striking the trees. Nor could he see his rifle sights, but at the last shot the bull collapsed in his tracks and when he came to look him over he found that all three bullets had taken effect. The distance was one hundred and twenty-

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five yards, a remarkable performance under the circumstances.

Several days later Mussen and I crossed the White River to the north side of the Cañon and packed over the summit of Miles Ridge, camping above timber at an elevation of five thousand feet. The following day we hunted around Taylor Mountain; in fact, Mussen went squarely over the summit of this 7,500-foot spur of the Nutzotins. On the mountains north of the moraine behind Taylor Mountain I saw a number of bands of rams, including some whose horns would have made fine trophies if it had not been for the broken tips. This blemish appears to be characteristic of the White River sheep.

Just after dark, while going up a ravine that headed near our camp, I ran into a pair of fighting bull moose and lost half an hour getting around them. I had said I would kill no moose on this trip unless we needed one for meat but my self-restraint was somewhat tried before I could find a place to get up the nearly perpendicular side of the gully. Several times after almost reaching the top I was stopped by rock I could not get over, and once I slid down very close to the moose in the narrow bottom of the ravine.

I think now that the moose had locked antlers.

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Mussen did not reach camp till about eleven that night, after I was asleep. Long afterward he told me that his return was delayed by fighting moose in the same ravine. He also said that while near the spot the next day he again heard the rattle of moose horns and would have gone down to investigate had it not been for the blizzard that began just then. This blizzard drove us out of the mountains north of the Cañon. The air was so filled with snow that it was impossible to see any distance. The wind drove it in blinding clouds and the snow crystals cut the eyeballs so that like cattle we had to turn tail to the direction of the storm.

Mussen and I met at our temporary camp on Miles Ridge about three in the afternoon, and by dark had reached our base on the White River after a most difficult descent. Had it not been for the ropes with which we bound our feet and the sharpened tent poles used as Alpine stocks I doubt if we could have gotten down. The snow had no binding quality and peeled off and slipped on the steep slopes so as to make it almost impossible to get foothold.

For a last hunt Mussen went to a sheep lick near the head of the Cañon while I siwashed in the Rubbernecks. The Rubbernecks are one of the minor Nutzotin ranges south of the cañon flanking

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the Koidern River on the east. The mountains look like a ram range and old signs were plentiful but I found no sheep. The second day I almost made connections with a grizzly of large proportions, judging by the tracks, which unfortunately was all I saw of him.

The wind was blowing in my face as I rounded a small rocky pinnacle and got the first view of the slides near the summit of this particular mountain. Without going fully into view I raised my glasses and explored the new territory. The first thing I saw was a bear trail which, following with the binoculars, I found came almost to my feet. Dropping the glasses I could plainly see the tracks in the snow twenty yards away. I ran to the trail and saw where the bear had sat and slid down the mountainside to the shelter of the willows several hundred feet below, and no doubt after that into the spruce timber beyond. I looked over every possible place of concealment with my glasses and not being able to locate him followed the trail down to the timber, but the bear had made a clean get-away in a mighty short interval of time. He must have heard me as I was turning the rock point. If I had gotten there five minutes sooner I would have had a wonderful chance.

The next day I had better luck, killing a wild

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duck flying and a grizzly bear the same day with the same gun. When making this statement to a friend later on he asked, "With the same shot?"

I got the duck while walking down the Koidern River without taking off my pack for the shot. Three mallards jumped from the water, one quite a little in the rear, and swung by going upstream about fifty yards away. I fired at the second of the first two birds and scored a miss, shooting just behind. Throwing in another cartridge and swinging quickly with the last duck the sights caught him fairly. Down he came in a cloud of feathers and plunked in the river completely dressed but with none of the food meat damaged. The current carried the duck along just about as fast as I cared to walk and, as the wind was from the opposite side, he eventually drifted close enough to be retrieved.

Several miles farther down the river I ran into Richard Mitten and Jimmie Brown, who had rafted to that point the head of a fine moose Mitten had killed the day before. "Brownie" saved my wading the river by putting me across on the raft. They had just arrived at this place with horses to pack the moose to their camp at the Cañon five miles away.

I sat down and talked with Richard Mitten

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while Brownie completed a skinning job on which he was engaged. Meanwhile Brownie borrowed my best knife. I told them of the bear I had just missed seeing the day before and Mitten suggested that I might find one at Mussen's first moose. The Mittens, it may be said in passing, had between them killed four grizzlies, a black and a brown bear. "We'll take your pack," said Mitten. "Go over there, I am sure you will get a bear."

I accepted his statement at face value. For the last half hour my subconscious mind had been groping for this hunch. From that moment it was simply a question of walking the additional two miles and the labor of removing and packing in the hide. Brownie said, "You will want your knife, won't you?" I answered in the negative. The knife I had was little better than a hoe, but I was afraid to break the spell.

I came, a little sooner than expected, to the spot where the moose had been killed. I had not yet recognized the locality when through a gap in the spruces I saw a grizzly that looked to be six feet high. He was a light-colored bear in good fur, sitting on his haunches and looking intently at some object to my left, possibly another bear. What it was I never ascertained for my bear was less than forty yards off and one jump would take

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him out of sight forever, so I threw the rifle up and the same instant put a ball in his neck. The bear did not fall but seemed frozen to the spot. I put two more shots through behind the foreleg and a fourth in the head near the ear. The last shot produced the desired result. The bear immediately collapsed, rolled over on his back, and his feet flopped down easily at his sides.

Filling the magazine of the rifle I walked half the distance to the bear and then realizing that it was afternoon sat down on a log and ate my lunch meanwhile admiring the long silvery fur as it rippled in the wind. Lunch completed I picked up a piece of wood and tossed it on the bear, and then walking up put my finger on his eye. I did not want to start skinning him before being certain there was no longer offensive power behind his business-like claws.

The shots behind the foreleg had both gone through the bear but the other two shots had not. Instead of breaking his neck the first bullet had gone to pieces after passing through the hide and only a splatter of lead had reached the bone. This apparently had paralyzed the bear. The opposite shoulder was broken by one of the shots, but strangely enough this fact had not caused the bear to change his position. All four shots were fired

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very quickly. Mitten, who heard them, said it sounded like the fusillade from an automatic.

The bear was a large male grizzly, but the effect of size had been greatly enhanced from the fact that he was sitting on top of a mound of moss and earth he had constructed to bury the remains of the moose. The strength of the bear was shown by the fact that he had dragged the carcass, which must have weighed over a thousand pounds, out of a wet spot where it had lain to dryer ground, no great distance, to be sure, but up an appreciable incline where the footing was none too good.

The bear had worn a deep trail through the soft ground apparently by repeated visits to the spot. I paced the place where he had excavated the material to cover the carcass and found it to be twenty by twenty, or four hundred square feet on the surface. He had not dug down any considerable depth, but anyone who has seen spruce roots matted in Alaskan moss will realize that tooth and nail and temper had full swing in that job. The mound over the moose was of about the same area as the excavation, and no least part of the carcass was visible.

I spent half an hour looking for a stone to whet my knife, but without success. The soil was alluvial and I could not even find gravel. Finally I had

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to give up and do the skinning with the dull knife. Four and a half hours were required for the task, the latter part being in darkness, and it was eleven when I reached camp with the hide.

Mussen and I waited two days until Andy Taylor completed the boat in which the Mittens and Captain Hubrick were to accompany us down the White River to the Yukon, and it was the last day of September when we left the Cañon. Winter came that night. When we awoke the morning of October 1 the temperature was below zero and the river bank full with mush ice. On the third the thermometer registered five below zero. That night we caught the upriver steamboat *Selkirk*. Two days later it was ten below zero and there it stayed up to the time of our sailing for the States. Winter came three weeks early in 1919 in the Yukon and the early snowfall also was greater than usual, it being said at White Horse that the depth in the early days of October equaled that of many mild winters. Hunting parties were frozen in at several places and suffered considerable hardship before getting out. The worst luck of all, however, befell Jimmie Brown, whom we left at the Cañon.

In company with Taylor and Miller, "Brownie" started back for McCarthy across Scolai Pass with

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the horses. When they reached the Russell Glacier they found five feet of snow and were unable to get the horses across. Taylor and Miller kept on, but Brownie returned with the horses with the intention of wintering them in the valley of the White, where there is plenty of grass and pea vine and but very little snow in ordinary winters. The winter of 1919-1920, however, was no ordinary winter and few if any of the horses pulled through.

Some time later on Brownie fell in with a man named Campbell who had a dog team and again essayed to cross Scolai Pass. On the Nizina Glacier they were caught in a blizzard, the wind being behind them. Traveling in the bed of a great crevasse they came to a place they could not get down and the dogs refused to face the wind. The men got in their sleeping bags, but, when morning came and the storm was over, both were badly frozen and all the dogs but one were dead. Abandoning even their snow shoes the men crawled to a refuge cabin five miles below at timber line.

Brownie and Campbell were sixteen days in this cabin without food. At the end of that time the Shushanna mail came along and McClelland and Maher carried the men to McCarthy.

Captain Hubrick wrote that when he saw Brownie with the flesh black and putrid on his face

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and extremities the tears came to his eyes. Campbell was not so badly frozen. Brownie had the best medical attention money could provide with the result that the amount of amputation was minimized and in 1920 he wrangled horses for a hunting party on the Nabesna.

Mussen and I got all the game of the country except sheep. We could have killed a number of rams but passed by fair heads in the hopes of getting better. We were thoroughly satisfied, however, because as far as the kill was concerned numbers to us meant nothing.

John B. Burnham.

The Establishment of Mt. McKinley National Park

The Boone and Crockett Club, founded originally by riflemen and hunters, has, with the transformation of North America from frontier to almost old world conditions, been itself transformed into a club whose achievements in the field of conservation have been far-reaching.

One of its most recent achievements is the establishment of Mt. McKinley National Park in Alaska, if the Club be allowed to appropriate to itself the results of the foresight and zeal of one of its members, Charles Sheldon. Mr. Sheldon has advised me that the interest of the Boone and Crockett Club in creating game refuges, especially in Alaska, was the sole cause which inspired in him the thought of preserving this area after personally studying the situation in that land.

It took George Bird Grinnell nineteen years to establish Glacier National Park, counting the years which elapsed from the date of the conception, in 1891, and the public announcement of the plan of

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the proposed park and game refuge ten years later, down to the date when the statute establishing the park was actually enacted, in 1910.

Mr. Sheldon was more fortunate in point of time. The plan of conserving the Mt. McKinley region as a national park was conceived in the summer and fall of 1906 by Charles Sheldon and by him alone, and during the following year he devoted much time to studying on the spot the proper boundaries of the proposed national park, so as to include therein territories suitable for a game refuge.

Upon his return to the East in 1908, the Game Committee of the Boone and Crockett Club, of which he was chairman, took under consideration the question of game refuges in Alaska, and especially in the region adjacent to the northern slopes of Mt. McKinley. It was felt, however, that the time was not favorable for congressional action and that the best hope of success rested on obtaining approval and support from the Alaskans themselves.

Later, while this matter was under discussion, the construction of the Alaska Railroad from the southern coast of Alaska to Fairbanks was making rapid progress and the route as laid out crossed Broad Pass and so rendered easily accessible the

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eastern limit of the Mt. McKinley Park outlined in Mr. Sheldon's plan.

The first step was to secure the approval and coöperation of the delegate who represented Alaska in Congress. In October, 1915, Mr. Sheldon took up the matter with Dr. E. W. Nelson of the Biological Survey at Washington, D. C., and with Mr. George Bird Grinnell, with a view to introducing a suitable bill at the coming session of Congress. The matter was then again considered by the Game Committee of the Boone and Crockett Club, and after full discussion received the Committee's endorsement. On December 3 of the same year, it was formally laid before James Wickersham, then delegate from Alaska, who, after some deliberation, gave his approval to the establishment of a park in the Mt. McKinley region. The whole project was then presented to the Executive Committee of the Boone and Crockett Club and was unanimously endorsed by them on December 15, 1915.

The plan was thereupon brought to the attention of Stephen T. Mather, in charge of national parks at Washington, D. C., as a plan originating with and endorsed by the Boone and Crockett Club. It received the immediate and cordial approval of Mr. Mather. He and Secretary Lane

Mt. McKinley National Park

secured the coöperation of Thomas Riggs, Jr., later governor of Alaska but at that time in charge of the Alaskan Boundary Survey. Mr. Riggs was asked to draw a bill for the establishment of a national park in the Mt. McKinley region, with boundaries as suggested by Mr. Sheldon. The western, northern and eastern limits of the park were laid out by Mr. Sheldon from his own personal knowledge, based on observations made during an entire winter season spent on and near the northern slopes of the mountain. The southern boundary, of little importance with reference to the conservation of game, was based on convenient topographical features.

After this plan had been formally presented to the authorities in Washington, several similar propositions, some including the Mt. McKinley region, were brought forward, but the net result of these activities was the preliminary drawing of a bill by Mr. Riggs with the boundaries approximately as outlined by Mr. Sheldon.

Mr. Sheldon suggested that the park be known as *The Denali National Park*, "Denali" being the local Indian name for the mountain and signifying "The Great High One." This suggestion, however, was not followed. The drafted bill was submitted to and approved by Delegate Wickersham,

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who thereupon decided to introduce the bill himself.

After prolonged discussion as to boundaries, the original outlines approximately as suggested by Charles Sheldon were accepted and were embodied in bills introduced in April, 1916, by Delegate Wickersham in the House, and in the Senate by Senator Key Pitman, of Nevada.

Meantime, other organizations and individuals interested in game conservation and in national parks had taken up the proposed park scheme and were at Washington, arousing public sentiment in its favor.

In order to retain and to coördinate all these favorable influences, Mr. Sheldon called, at his house in New York, a meeting of the Game Preservation Committee of the Boone and Crockett Club, which was attended also by a committee from the Camp Fire Club and one from the American Game Protective Association, both of which societies were deeply interested in the proposed bill, and had done effective work in its behalf. At this meeting it was determined that the campaign in Congress be entrusted to the American Game Protective Association, its president, Mr. Burnham, assuming the active leadership. Mr. Burnham was duly authorized by his associa-

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tion to undertake this work, and the various clubs and individuals supporting the measure agreed to act unitedly under his direction.

Immediately after the introduction of these bills in Congress, a widespread campaign was started to accelerate their passage and in this work George Bird Grinnell, now President of the Boone and Crockett Club, took an active part, ably backed by a number of clubs and associations and influential individuals. Hearings were held before the Committee on Public Lands, in the House, and of Territories, in the Senate.

Some difference of opinion arose among the officials at Washington as to the advisability of certain amendments, and for a time no progress was made in the House, but in the Senate the bill was reported out by the Committee.

All through the spring and summer of 1916 much active work was done by the Boone and Crockett Club. A banquet given by the Club in Washington gave the advocates of the bill an opportunity to explain its importance to the country to some members of Congress. Effective work in Washington and elsewhere was also done by individual members and, above all, by Mr. Burnham.

Nevertheless, first one cause and then another, which had no relation whatever to the merits of

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the bill, delayed its passage. The chief impediment was a policy adopted by the Committee on Public Lands that not more than two national park bills should be reported favorably in any single session of Congress and bills for the Mt. Lassen National Park, the Grand Canyon National Park and the Sawtooth National Park all claimed right of way over the Mt. McKinley Bill.

Public sentiment, however, kept piling up in favor of immediate action on the Mt. McKinley National Park in order to save its game while there was yet time. When the bill was finally reported out in 1917, it was so late in the session that it took its place on the Unanimous Consent Calendar of the House, where a single objection might block it. Yet, because of the ceaseless activity of Mr. Sheldon and Mr. Burnham, the bill was finally reached in the House and passed with some small amendments on February 19, 1917.

On the next day the Senate, which had already passed the bill, concurred in the amended House bill. After the necessary formality of obtaining the signature of the Secretary of the Interior, the bill, establishing Mt. McKinley National Park, was personally taken from the office of the Secretary to the White House by Charles Sheldon on Feb-

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ruary 24, 1917. On February 26, 1917, the President of the United States signed it and presented to Mr. Sheldon the pen with which he had affixed his signature.

Eleven years had elapsed from the conception of Mt. McKinley National Park to the actual signing of the bill. It was quick work. Public sentiment in this country in matters of conservation moves with reasonable celerity but unfortunately the forces engaged in the work of destroying our forests and game work even more rapidly.

It is seldom that the history of an achievement of such magnitude as the Mt. McKinley National Park has been recorded in full, but many of the facts set forth above are within the personal knowledge of the writer, and in an Appendix is given an abstract, in chronological order, of the written records and of the correspondence covering all essential points. All the signed documents and letters referred to are in the files of the Boone and Crockett Club.

Madison Grant.

The Beginnings of Glacier National Park

In 1919 the writer was greatly impressed by the fact that, although the Glacier National Park had been established only nine years, the memory of its dedication as a federal reserve had already begun to fade into tradition and the historical facts concerning the Park had become obscured and distorted.

As a member of the governing body of the Boone and Crockett Club, the writer had been for years familiar with the long-continued efforts to establish Glacier National Park, and these notes and memoranda were gathered in order to set down, before it was too late, all the material available concerning its origin. These data were published in 1919 by the National Park Service of the Interior Department as part of the historical record of the park.

The Glacier National Park lies in a remote corner of Montana along the Continental Divide in the Rocky Mountains, immediately adjoining the Dominion of Canada. Before the building of

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the Northern Pacific Railroad it had been scarcely visited except by an occasional mountain-man or trapper. These mountain-men penetrated the remote fastnesses of the Rocky Mountains in the early decades of the nineteenth century, but they passed and left no record behind. Many a mountain slope or tree-studded valley has borne silent witness to their solitary roamings and oftentimes tragic end in hopeless fight against savage foes. With the building of the transcontinental railroads, men entered the country who were capable of recording what they saw, and who realized the importance of making such records.

Little is known of the earlier history of the Glacier National Park region. Perhaps the first account of it is the story told by old Hugh Monroe, of the visit, long ago, of a missionary priest to the Lower St. Mary Lake.

Chief Mountain, by far the boldest natural feature of the region, had been seen and named long before that, for on the early map sent back to President Jefferson by Lewis and Clark in 1804 a mountain is indicated at about this point, called The King—evidently a translation of the Indian term, Chief of Mountains. It is not surprising that it should have received this name, for it is visible for a great distance from the prairie, north, east

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and south, and stands out before the other mountains of the range like a chief leading his men.

After the mountain-men, and yet long before the day of the railroads, we have one or two early records of the general region, one by A. W. Tinkham, who in 1853 approached it from the west and south, while in May of the following year James Doty, accompanying Governor I. I. Stevens on his exploring trip in charge of the railroad survey along the forty-seventh parallel, actually saw the area which is now the park. Doty's detailed report enables us to follow him from camp to camp until he reached the body of water now known as the Lower St. Mary Lake, to which he referred as "the well-known Chief Mountain Lake," stating that the name was then established. The present Upper St. Mary Lake he called Bow Lake. In later maps these early names went astray, and the very appropriate name, Chief Mountain Lake, became attached to another lake farther north and lying across the international boundary in longitude about $113^{\circ} 53'$. That Chief Mountain Lake was described and a survey of it published in the international boundary survey in 1878. It is now known as Waterton Lake.

It is to be regretted that the Lower St. Mary Lake, dominated as it is by the great peak Chief

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Mountain, does not bear the name Chief Mountain Lake, given it long ago by a Hudson Bay factor. This matter might properly be brought to the attention of the National Board of Geographic Names with such evidence additional to that heretofore available as might warrant a reconsideration of any earlier decision by the Board.

The shift of names was perhaps based on the map purporting to give Doty's route, printed in Volume XI of the *Pacific Railroad Reports*, compiled in the engineer's office from surveys of 1853-1857, where Chief Mountain Lake is given as lying across the border, partly in the United States and partly in British territory. This is Waterton Lake, and was very likely taken from Blakiston's—1858—map. Those familiar with Doty's narrative and route do not agree that this lake lying across the parallel of 49° N. is Doty's Chief Mountain Lake. Lieutenant G. K. Warren, under whose direction these maps were compiled, calls attention to the difficulties met with in harmonizing the various surveys he had to work with, and implies that in some cases he was obliged to force an agreement.

Mr. Grinnell long ago gave reasons* for believing that the Lower St. Mary Lake was the

* *Science*, August 12, 1892, Vol. XX, p. 85.

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Chief Mountain Lake of Doty. Briefly they are these:

In the narrative of his trip* Doty says he camped on a small stream—one of the heads of Milk River—eight miles beyond and north of Cut Bank River, and then went on, and after seventeen miles saw in a valley five hundred feet below him the Chief Mountain Lake. The distance is about right to have brought him to the Lower St. Mary Lake.

He describes in some detail the heads of Milk River, crossed before he reached his Chief Mountain Lake, and mentions particularly the growth of pine timber seen on the mountains near and on Divide Mountain, which extends toward the plain for a distance from Divide Mountain.

According to Doty, the south end of Chief Mountain Lake is in $48^{\circ} 41' 8''$, or about seventeen miles south of the boundary line, which would make the north end about ten miles south of that line. By modern maps this northern end is about eleven miles south of the boundary. Doty also says definitely that his survey shows that (his) Chief Mountain Lake and its environs belong to the United States.

The lengths he gives for the two lakes, *i.e.*,

* *Pacific Railroad Reports*, Vol. I, p. 549.

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Chief Mountain and Bow Lake, are approximately those of the Lower and Upper St. Mary lakes. He further says that the outlet of his Chief Mountain Lake is called in the Blackfeet language Mo-kó-un or Belly River, which is what the St. Mary River—the outlet of the Lower St. Mary Lake—is called by the Blackfeet today; that it is the most southerly of the headwaters of the Saskatchewan River, and that one large fork arises near Chief Mountain. This would be Kennedy Creek.

At the time when Lieutenant Warren's map was made the existence of the St. Mary lakes was not known, but Blakiston's Waterton Lake was known, and it seems probable that the compilers of the map in Volume XI of the *Pacific Railroad Reports*, knowing that there was a considerable lake near the boundary line, assumed that this was the lake visited by Doty and set down his trail as going to and beyond that lake. This inference is confirmed by the fact that the maps in Volume XI make Doty's—and the Blackfeet's—Belly River, Mo-kó-un, flow out of the Chief Mountain Lake, which crosses the international boundary, and have moved the heads of Milk River far to the north. In other words, Lieutenant Warren accepted Doty's name for a lake and river, but did not

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accept his survey, and did not believe that he had properly located the lake and river that he named. Yet Doty was right, and this is one case where Lieutenant Warren by forcing an agreement of the surveys made his map wrong.

In 1882 Professor Raphael Pumpelly tried to cross the main chain of the Rocky Mountains by the Cut Bank Pass, but finding the snow too deep was obliged to turn back. In 1883, however, by the same Cut Bank Pass, he crossed from west to east and discovered the glacier, which is a part of the iceflow from the Blackfoot Mountain and is now known as the Pumpelly Glacier. With Professor Pumpelly were W. A. Stiles, a writer well known between 1870 and 1890 and for many years the editor of Professor C. S. Sargent's *Garden and Forest*, and W. R. Logan, who was long in the service of the Indian Bureau and was the first superintendent of Glacier Park.

Professor Pumpelly, eminent in science, outdoor man and nature lover, beheld the scenes of the Glacier National Park with enthusiasm. He says:

"Among these limestone mountains—from lofty crest and in cirques—you will see the grandest scenery in the United States; and the best time to see it is when, from high-lying snow fields water

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falls are plunging 2,000 feet down almost vertical steps.

"A sharply cut pyramid towers 1,000 feet above the [Cut Bank] Pass. Its four faces form the upward extension of the intersection of four amphitheater walls—two on each side of the crest—and it indicates a lowering of the crest here during the glacial period by at least 1,000 feet."

The outlying prairie borders of the region were by this time becoming known, and a few prospectors were washing for gold along the lower reaches of Swiftcurrent and Kennedy creeks and on the St. Mary River.

In 1885, George Bird Grinnell, of New York, having heard many accounts of the country, went there on a hunting trip. The route at that time was by the Northern Pacific Railroad to Helena, thence to Fort Benton, one hundred and sixteen miles by stage; from that point to the Old Piegan Agency on Badger Creek, ninety miles by wagon; and from there to the lake and mountains by saddle.

The mountains here had always been a hunting ground for Indians and had been visited by parties of Kootenais from the west, and by Crees and Bloods from the north. The Kootenais and the Crees were good mountain hunters and all three

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tribes were good trappers. The streams of the mountains and the lakes and pools of the foothills abounded in beaver, while game was plentiful. The Blackfeet, too, camped about the lakes and hunted the mountain bison found in the valleys and on the foothills. Sometimes hostile camps met here and more than once the great flat at the foot of the Lower St. Mary Lake has been the scene of battle.

As an example of the abundance of game in those days, Mr. Grinnell records that in eight days a party of Kootenai Indians with whom he hunted killed two or three moose, two or three elk, many sheep and goats and eighty beaver.

Two years later, at what is now known as Lake McDermott, the ice mass now known as Grinnell Glacier was seen and its character recognized. In company with Lieutenant J. H. Beacom, later Colonel Beacom, U.S.A., the glacier was climbed and explored by Grinnell, and Lieutenant Beacom named the mountain, glacier and lake.

From 1887 on, Mr. Grinnell returned each summer and autumn for a number of years, devoting his time to hunting, climbing, exploring and the study of the Blackfeet Indians.

In 1891 with William H. Seward and Henry L. Stimson a trip was made to the head of the St.

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Mary River where the Blackfeet Glacier, the largest ice mass in the park, was discovered and named. That year, and later, names were given to various physiographic features of the park.

At this time the mountain area on the east side of the Continental Divide, from the international boundary line south to Birch Creek, was the westerly portion of the Blackfeet Indian Reservation, but was not used by these Indians. It was a region of great precipitation, and, so long as its forests were preserved, would constitute a storage reservoir of great value. It early occurred to Mr. Grinnell to try to have the region set aside as a national park, and it is matter of record that the project of the Glacier National Park for the first time took concrete shape in September, 1891, in his suggestion that a movement be set on foot for the government to buy the St. Mary region and turn it into a national reservation. The Great Northern Railroad was then just being built through this country and it was believed that its managers might be persuaded to see material advantage in backing the project. After long consideration the proposal was elaborated by Mr. Grinnell in an article called "The Crown of the Continent" and published in the *Century Magazine*, September, 1901, from which we quote:

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The Chief Mountain region has a real value to this country, and this consists in its being a reservoir for the storage of the great amount of moisture precipitated here. For eight or nine months of the year this moisture takes the form of snow, and supplies the annual waste caused by the melting of the glaciers. Without these glaciers and the far-reaching fields of snow which lie on many of the mountains, the lakes and the rivers would soon go dry. At present all the watercourses are full at all seasons of the year, and the winter's snows, protected by dense pine forests, are still slowly melting in June and July. The St. Mary River is a very large stream, and south of it, until we come to the Missouri River, there is none carrying an equal volume of water flowing out of the Rocky Mountains to the eastward. A plan is already on foot to divert the St. Mary from its present course and turn it into Milk River. If this should be done it would render irrigable many hundreds of square miles in northern Montana which are now quite without value from lack of water. But if the forests of the Chief Mountain region should be swept away by fire or the ax, its value as a reservoir would be gone. Large tracts of forest on Swiftcurrent have been burned over by hunting parties of Canadian Indians, and this danger is ever present.

Persons who have given intelligent study to the problems of forestry and the needs of the arid West appreciate the importance of protecting the sources of rivers flowing from the Rocky Mountains over the plains east and west, and it is obvious that the greater the number of settlers who establish themselves on these dry plains the more water will be used and so the more needed. The question

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of water supply is the most important that to-day confronts the States which border the Rocky Mountains. Already many of these States are feeling in the lessened volume of their streams the evil effect of the wasteful destruction of their forests. Great rivers like the Platte, the Arkansas, and the Rio Grande receive in a short time the quickly melting snows which lie on the naked sides of the mountains in which they rise, and when this flood is over, they fall at once to their summer level. Besides this they are tapped all along their courses by flumes and ditches which carry off the water and spread it over the ground. The result is that even these large rivers dwindle in midsummer and autumn to mere trickles of water, or become wholly dry. Their waters have been used up.

Happily, in 1897, by the official initiative of the United States Forest Commission, of which Prof. Charles S. Sargent was chairman, a large section of this mountain country was made into a forest reserve, including Upper St. Mary Lake. Under faithful and intelligent supervision, the dangers above spoken of will in large part be obviated, and in due time Montana will rejoice, as California is now doing, that so large a source of her water supply has thus been preserved for her people.

These paragraphs set forth truths that now are commonplace; but at that time such broad views on the conservation of water supply, forests and game were unusual.

Ten years had elapsed between Mr. Grinnell's first concept of the Glacier National Park and the

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publication of this article, and in the meantime various changes had taken place. In 1892 and 1893 indications of copper were found in the foothills, but as the country was an Indian reservation all prospecting was illegal. Since it was forbidden ground, people in the neighborhood began to imagine that great wealth must be hidden in the mountains, and strong pressure was brought to bear on Congress to purchase the mountain and foothill territory from the Indians and throw the region open to settlement.

The Blackfeet Indians, whose hunting grounds and reservation included the territory of the Glacier Park, cared little about this mountain country, as they had been for generations a plains tribe depending for support on the buffalo. The only Indians who hunted in the mountains were Crees or Stonies from the north and Kootenais from the west, though sometimes the Bloods came down from the north to trap beaver.

The result of the agitation to open this Indian country to prospectors was the passage of the act authorizing the purchase of the land from the Blackfeet Indians, and in 1895 the Secretary of the Interior appointed Mr. Grinnell, who was named at the request of the Blackfeet themselves, and Messrs. W. C. Pollock and W. M. Clements

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to treat with the Blackfeet. These negotiations resulted in the purchase of the mountain area of their reserve. The action of the commission was confirmed by Congress in June, 1896, and the land was thrown open in April, 1898. Between these dates many parties of prospectors secretly entered the forbidden territory, only to be discovered, arrested, escorted to the border, and released by the Indian police. Once set free they usually returned by some other route. The throwing open of the land was followed by a great incursion of miners and by a general prospecting of both sides of the mountains. Beautiful samples of copper were found, brought out and exhibited, and on some veins much work was done. The prospect holes and shafts may still be seen on many hillsides.

Experts from important mining camps were brought to the newly opened territory and looked it over, but all shook their heads in doubt, and none seemed to agree with the local optimists, who declared that this was to be a "bigger camp than Old Butte." After two or three years of unsuccessful prospecting for gold, silver, copper, and finally for oil, the miners here became discouraged and practically all the claims were abandoned.

By 1902 almost the last prospectors had with-

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drawn from the region, leaving behind them no marks of their presence more permanent than the prospect holes or shafts which they had dug at the cost of so much labor. They had cut down much timber for their mining operations, and in different localities adjacent to the claims rough log cabins, most of them roofless now through weather and decay, still mark the points where hopes once high had grown fainter and fainter and at last had been abandoned. The time came when the only claim still occupied was a well sunk for petroleum, whose high derrick until recently was a landmark in the valley of Swiftcurrent River. Many tales are told of the struggles of those interested in this oil well to make it appear a valuable prospect, and tradition tells of casks of crude petroleum secretly brought into the country and fed into the well to buoy up the hopes of those who had invested in it.

During the period of mining excitement Mr. Grinnell had regularly visited the region, where he was welcomed because his visits were known to be for the purpose of exploration and hunting and not for location of mineral deposits. He climbed and named many of the mountains; among others, Mount Jackson, Blackfeet Mountain and Mount

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Gould, and made the first sketch map of the region.

When the mining excitement died down, he recognized that the time was propitious to advance his plan for a national park, then ten years old, and approached Senator T. H. Carter, of Montana, suggesting its creation. He took the matter up also with friends in Montana, inducing them to write independently to the Senator. These suggestions resulted in the introduction by Senator Carter of the desired bill. It passed in the Senate twice, but the House felt slight interest in the measure. At length, however, Mr. L. W. Hill, who had visited the region, became an enthusiastic partisan of the bill, and Congressman Pray, of Montana, became interested. Mr. Hill saw in the measure great possibilities for the public benefit, as well as important material advantage to the Great Northern Railroad. With these new interests behind it the bill passed both houses and was signed by President Taft May 11, 1910, and the Glacier National Park, after nineteen years of effort, became an established fact.

After the establishment of the park the appropriations for its improvement and care were small. There were no roads or bridges and it was evident that without these the general public would be

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unable to enjoy the beauties of the region. At this juncture the Great Northern Railroad stepped into the gap and expended many thousands of dollars in building safe and good roads to the lakes, as well as camping places for tourists, which later grew into large and attractive hotels. Much of the earlier development of the park was thus due to L. W. Hill.

As a matter of historical interest some comments on many of the older names of the various natural features of the park are here appended. It could have been wished that all these names might have been Indian terms in their original form, but this could not be. For most of the mountains and the upper rivers the Blackfeet had no names, and where Blackfeet names for natural features existed they were so long and—for white lips—so unpronounceable that they could not be used. Where it was possible short Indian names or English translations of the names of famous men of an earlier generation were employed. Elsewhere English names were used, but in every case an effort was made to choose those of men who had some connection with the region.

Mr. Grinnell, having worked chiefly on the eastern side of the Continental Divide, is responsible for but few of the names on the western side.

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Mount Cleveland was named by him in 1898, when, standing on the summit of the Blackfeet Mountain, he recognized it as being the highest peak in the northern part of the park and named it after former President Grover Cleveland.

It is not known how Waterton Lake got its name, but it was probably named by Captain T. W. Blakiston, a member of the Palliser Expedition in 1858. Waterton Lake appears on his map of 1858. It may have been called after the naturalist, Charles Waterton (1782-1865). Its wrongly applied name, Chief Mountain Lake, has been referred to.

The name Chief Mountain is of Indian origin. In some early books and maps it is called King Mountain; in others, Kaiser Peak. Both are translations of the term by which it was known to the Indians. This peak was climbed from its easterly face in 1894 by H. L. Stimson and Dr. Walter B. James, both of New York. In 1903 it was ascended from the west by Mr. and Mrs. Grinnell.

Divide Mountain is a prominent peak, standing up as a broad pyramid at the southerly end of the so-called Milk River Ridge, the high divide which separates waters flowing into the Missouri and the Gulf from those emptying into Hudson Bay and the Arctic Ocean. This is the ridge passed

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over after leaving the heads of Milk River and just before the mountains beyond the St. Mary lakes appear to the northbound traveler. On the map it is called Hudson Bay Divide, a name much more apt than the one locally applied. The waters from one side of Divide Mountain run down into Divide Creek, which empties into the St. Mary Lake to go to Hudson Bay, and on the other side flow down into heads of Milk River, where they begin their long journey to the Gulf of Mexico.

Appekunny Mountain was named after J. W. Schultz, who went to Fort Benton in 1879 and soon after married a daughter of the Piegan, Yellow Wolf. Schultz's Indian name, Appekunny, means White-Spotted Robe, *i.e.*, a badly tanned robe with white hard spots.

Mount Henkel is named after the settler Henkel—known locally as Joe Butch, who for many years lived at the foot of the Lower St. Mary Lake. He is said to be a brother of the late William Henkel, long United States marshal in the southern district of New York.

Iceberg Lake was named by Mr. Grinnell in 1890 from the observed formation of little icebergs breaking off the glacier that flows down into the lake.

Mount Wilbur was also named by Mr. Grinnell



ICEBERG LAKE

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after his friend, the late E. R. Wilbur, long his associate on the editorial staff of *Forest and Stream*.

The mountain mass south of Chief Mountain and north of the South Fork of Kennedy Creek—on present maps named Yellow Mountains—used to be called Mount Robertson, and so appears on some of the early sketch maps. It was named after Lieutenant S. R. Robertson, U.S.A., who in 1885 made a trip from Fort Assiniboine, on Milk River, to St. Mary Lake.

In old days the Swiftcurrent Pass was called Horse Thief Pass, tradition relating that some horse thieves once drove across the mountains through this pass a band of horses stolen on the Blackfeet Reservation.

Mount Grinnell, Grinnell Lake and Grinnell Glacier were, as mentioned, named in 1887 by Lieutenant J. H. Beacom, as shown by entries in his diary of that year, which was sent to Mr. Grinnell by his brother after Colonel Beacom's death in Mexico in September, 1916.

Allen Mountain was named in 1891 by Grinnell, Seward and Stimson, after Cornelia Seward Allen, granddaughter of William H. Seward, Secretary of State in President Lincoln's Cabinet.

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She is the wife of Frederick T. Allen, of New York.

Point Mountain—from its situation—was so named in 1891 by Grinnell.

Mount Gould was so named in 1887 for George H. Gould, now a resident of Santa Barbara, California.

Singleshot Mountain was so called by J. W. Schultz in 1885, from the fact that Grinnell, by a lucky shot, killed a running sheep there.

Canyon Creek is an old name, and Mr. Grinnell gave Cataract Creek its name during one of his early visits, in 1887. Altyn Mountain and Cracker Lake were named by the miners, 1896-1897.

Mount Siyeh, Siyeh Glacier and Siyeh Pass were named by Grinnell about 1888 for a Piegan Blackfeet Indian now dead, a good friend and a man of influence and importance in the tribe.

Piegan Mountain was named in 1888 or 1889 for the tribe of the South Piegans.

Pollock Mountain and Clements Mountain were named by surveyor Ross Cartee in 1896, for those two members of the commission which made the agreement with the Indians to purchase the mountain territory now included in the park.

Logan Pass over the Continental Divide, south of the ridge lying between Mount Oberlin and

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Piegan Mountain, was no doubt named for W. R. Logan, long an Indian agent and the first superintendent of the park.

Reynolds Mountain, Grinnell named for his associate, Charles B. Reynolds, of New York City, for many years managing editor of *Forest and Stream*.

Going-to-the-Sun Mountain was named by J. W. Schultz, probably about 1885.

Baring Creek was named by Joe Kipp about 1884 or 1885 at a time when the two Baring brothers, of England, and their nephew were hunting at the lakes.

Sexton Glacier was named by J. B. Monroe after the late Lawrence E. Sexton, of New York City.

Roes Basin on the map is an erroneous spelling. In 1885 Mr. Grinnell named it after a companion, Charles Rose, a half-breed Piegan Indian. It should be Rose Basin. The mountain and the basin were sometimes called by Rose's Indian name, Yellow Fish Mountain and Yellow Fish Basin.

Fusilade Mountain took its name from the volleys fired one afternoon in 1891 by Henry L. Stimson and W. H. Seward when shooting at goats there.

Gunsight Mountain, Pass and Lake and Citadel

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Mountain were named by Grinnell, Stimson and Seward in 1891.

Mr. Grinnell also gave their names to Red Eagle Lake and Mountain, Little Chief Mountain and Almost-a-Dog Mountain in 1887, and to Mount Jackson and the Blackfeet Mountain and Blackfeet Glacier in 1891. The first three of the names are those of old-time Indian friends, while William Jackson was a quarter-breed Piegan, a grandson of old Hugh Monroe, and a good scout and prairie and mountain-man.

In 1891 Mount Stimson was named in honor of Henry L. Stimson. This is the mountain now called Mount Logan on the map, between the head of the Red Eagle Creek and the head of St. Mary River. By some change this name has been moved over to what was originally called Mount James, which now appears on the government map as Mount "Stimpson."

On his early map Mr. Grinnell gave their names to Split Mountain and Norris Mountain but not to the Mount James shown on the government map. Divide Mountain is an old name, but the name White Calf Mountain was given in 1896-1897 by the people who were surveying the boundaries of the ceded strip. Rising Wolf Mountain was named by Schultz many years ago for old

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Hugh Monroe, who came into the country in 1813.

Flinsch Peak was named for a young Austrian who hunted near it a number of years ago.

On the west side of the Continental Divide, in a general way south of the "Mount Stimpson" of the map, are mountains named by Mr. Grinnell for Three Suns, Eaglehead, Wolftail, and again to the east, Little Dog. These were all important men in the Piegan Tribe at that time.

In the main range, west of Glacier Park Hotel, is Bearhead Mountain, and south of that Red Crow Mountain. The Indian, Bear Head, was still living in 1922; Red Crow was a Blood chief.

The so-called Appistoki Peak, north of Mount Henry and nearly south of Two Medicine chalets, ought to be called Apistotoki.

Pumpelly Pillar, just east of Two Medicine Lake, is named for Professor R. Pumpelly.

The terms Two Medicine Lake, Two Medicine River, and so on, are abbreviations for Two Medicine Lodge Lake, etc. Many years ago the Blackfeet twice held the ceremony of the Medicine Lodge on this river.

These are some of the essential facts which have to do with the genesis of the Glacier National Park, and with the names borne by some of its main natural features. Those desiring to

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know more details of its early history and of the life of the people who lived about it, should read: "The Ascent of Chief Mountain," by Henry L. Stimson in *Hunting in Many Lands*, New York, 1895; *Blackfoot Lodge Tales*, by George Bird Grinnell, New York, 1892; "Crown of the Continent," by George Bird Grinnell, *Century Magazine*, September, 1901; "To the Walled In Lakes," by George Bird Grinnell, *Forest and Stream*, 1885-1886.

Madison Grant.

The National Recreation Conference

1924

In the year 1870 Cornelius Hedges declared to his friends about the campfire that the region of the present Yellowstone Park ought to be made a National Park to be held forever as a pleasure ground for the American people. This was, I think, the first suggestion of a recreation policy for the United States.

From that beginning, the development of the thought has been continuous, and it has been more and more put into practice until now our National Parks, National Monuments and great areas of our Forest Reserves are devoted wholly or in part to recreation. The ever growing importance of the thought is shown by policies advanced by the Boone and Crockett Club in 1923, and by the announcement by the President in April, 1924, that a recreation policy ought to be formulated by the Government, and by his appointment of a committee to draw up a plan for such a policy. It is interesting and fitting that the need for this

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action should have been brought to the attention of Mr. Coolidge by Theodore Roosevelt, whose father's activities in all matters helpful to his fellow citizens remain a bright memory, and that the Club founded by his father should have been the body to suggest this policy and bring it to a head. The story of how this came about is worth telling now, while the matter is still fresh in mind.

Before Col. Henry S. Graves resigned as United States Forester he had given long consideration to the care of the game in the National Forests and to their uses for recreation, and had aroused a permanent interest in these matters in the Forest Service. As he thought more about them he reached the conclusion that in some form or other the National Government should initiate a recreation policy, and, further, that such a policy ought to be set on foot by the President of the United States. He talked of this with friends, among them especially Charles Sheldon, who had suggested the same thing and was very keen over it. Sheldon had discussed it with Congressmen, Senators, Bureau Chiefs and others, and once or twice had brought up the subject at hearings before Committees of Congress.

After the passage by the Senate of the Smith Bill to authorize in the Yellowstone Park a stor-

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age reservoir to be used for irrigation purposes, Colonel Graves in July, 1920, published in *American Forestry* a strong article entitled "A Crisis in National Recreation," in which he declared his belief that if the President should suggest the formulation of a recreation policy the matter could readily be worked out. He also outlined a plan for such a policy. This was, perhaps, the first formal printed and somewhat detailed proposition for such a plan. However, time passed, the public did not seem to grasp the idea and nothing was done.

Meantime Sheldon had kept up his quiet work and had drawn up a policy for the care of western big game in the National Forests and for the administration of game in connection with a National Recreation Policy. After discussion and careful consideration, the Executive Committee of the Boone and Crockett Club recommended these papers to the Club, which unanimously adopted them and ordered them printed and circulated among sportsmen and conservationists. Their circulation constituted the first propaganda on the subject. Sheldon then went over the general question with Theodore Roosevelt, who recognized its importance and became eager to push it forward. Finally Roosevelt brought the matter to the atten-

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tion of Mr. Coolidge and found him very receptive. The reasons advanced in behalf of such a policy were convincing, and on April 14 Mr. Coolidge publicly announced his advocacy of a National Recreation Policy, and issued his call for a conference in which the Government, the states, the different civilian associations, and, finally, the individuals of the country should organize for coöperation as to outdoor matters. The President appointed a committee consisting of Secretary Weeks, Secretary Hoover, Secretary Work, Secretary Wallace and Assistant Secretary Roosevelt, to suggest to him how such a National Policy could be formulated and put in action. Later he added Secretary Davis to the Committee.

A conference of persons interested was called to consider the President's announcement, and invitations were sent out to organizations of many kinds, scientific, conservational, social and religious, asking them to meet in Washington May 22, 23 and 24. Attention was called to the vast number of our people who are interested in some form of out-of-door life and the importance of coöperation among all interested in the subject was emphasized. Reports show that during the season of 1923, 13,000,000 people found recreation in the National Parks and Forests; and over

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6,000,000 went hunting. This is but a small proportion of the great multitude who seek to spend some of their time out of doors.

The meeting was duly held and was attended by 309 delegates from 128 organizations scattered from the Atlantic to the Pacific. The President's Committee acted as Honorary Chairmen of the meeting, while Theodore Roosevelt was the Executive Chairman. The President opened the meeting by an address which excited great enthusiasm. It advocated not only recreation, but recreation out of doors and an interest in nature, and thus supported the views that many of his hearers had held, preached and practiced for many years. He said:

"I want to see all Americans have a reasonable amount of leisure. Then I want to see them educated to use such leisure for their own enjoyment and betterment, and the strengthening of the quality of their citizenship. We can go a long way in that direction by getting them out of doors and really interested in nature. We can make still further progress by engaging them in games and sports. Our country is a land of cultured men and women. It is a land of agriculture, of industries, of schools and of places of religious worship. It is a land of varied climes and scenery, of mountain

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and plain, of lake and river. It is the American heritage. We must make it a land of vision, a land of work, of sincere striving for the good, but we must add to all these, in order to round out the full stature of the people, an ample effort to make it a land of wholesome enjoyment and perennial gladness."

Immediately after the President's address 18 committees were appointed and at once set to work on the various subjects that fell within the scope of the conference. The Chairman of the General Resolutions Committee was Charles Sheldon, and to that Committee all the resolutions went, to be again gone over, harmonized and brought into the conference. These committees worked for two days, and while they were at work many interesting addresses were given to those who did not belong to the different committees.

The Conference appointed one hundred individuals to form an Advisory Council to work with the President's Committee, and this Advisory Council chose twelve members to serve between meetings of the Advisory Council. The personnel of the Executive Committee is:

Chauncey J. Hamlin, New York, Chairman.

Dr. John C. Merriam, California, Vice Chairman.

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George E. Scott, Illinois, Treasurer and Chairman Finance Committee.

Dr. Vernon L. Kellogg, California.

Walter F. Martin, Washington, D. C.

John Barton Payne, Illinois.

Mrs. Jane Deeter Rippin, New York.

Charles Sheldon, Washington, D. C.

Mrs. John Dickinson Sherman, Colorado.

George Shiras, 3d, Michigan.

James E. West, New York.

L. F. Kneipp, Executive Secretary.

The last business of the Conference was the reading of his report by Charles Sheldon, the Chairman of the Resolutions Committee, and its unanimous adoption. The resolutions which follow are printed also in Senate Document No. 151, 68th Congress, 1st Session. This is a full report of The Proceedings of The National Conference on Outdoor Recreation, and includes the associations represented, all the membership of the various committees, and the full resolutions offered by each committee. Though containing many minor errors, it should be read by every conservationist. It can be had, on application, from George A. Sanderson, Secretary, Senate Chamber, Washington, D. C. The resolutions follow:

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CITIZENSHIP VALUES

I.

Resolved, that outdoor recreation furnishes opportunity to gain abounding health, strength, wholesome enjoyment, understanding and love of nature, good-fellowship and keen sportsmanship and, above all, has a direct beneficial influence on the formation of sturdy character by developing those qualities of self-control, endurance under hardship, reliance on self, and coöperation with others in team work which are so necessary to good citizenship.

FEDERAL LAND POLICY

II.

Whereas, it seems desirable to express the opinion of the Conference regarding the primary functions of the two major governmental agencies naturally touching the field of recreation, namely, the National Park Service and the National Forest Service, be it

Resolved, 1. That the Conference express its approval of the historic and popular belief that the National Parks System consists of permanent national reservations protecting inviolate those wonderful or unique areas of our country which are museums representing the scenery and principal natural features of the United States available in our great heritage of animate and inanimate nature;

2. That these Parks must be protected completely from all economic use; that their scenic qualities should represent features of national importance as distinguished from those of sectional or local significance, and that they must be preserved in a condition of unmodified nature;

3. That laws should be provided which will furnish an

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administration as nearly uniform as possible throughout the National Parks System;

4. That the Conference express its approval of the statement that National Forests are areas set aside to protect and maintain in a permanently productive or useful condition lands unsuited to agriculture but capable of yielding timber or other general public benefits; and that all resources of National Forests, including recreation, should be developed to the greatest possible extent consistent with permanent productivity in such a way as to insure the highest use of all parts of the area involved;

5. That the Conference respectfully calls to the attention of the President's Committee the fact that recreation in the National Forests may be better served by such adjustment of both state and federal laws and of responsibility for their execution that the Forest Service can administer effectively the wild life of the forests, and protect isolated gems of scenery such as may naturally fall within the forests.

And Whereas, in the judgment of this Conference valuable recreational resources in the public domain are rapidly being lost to public use; therefore be it

6. *Resolved*, That the attention of the Federal Government be called to the need of a careful survey of all available resources of the publicly owned lands in order that we may secure adequate information regarding recreational facilities of such areas;

7. That the Federal Government be requested to give consideration to the administration of such areas of publicly owned lands as are found to have special importance by reason of their availability for recreational purposes;

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8. That the President's Conference respectfully call to the attention of the Federal Government the fact that in determining the administration of recreational areas on publicly owned lands it is desirable to recognize the possibility of transfer of such lands to the National Park Service, the Forest Service, or to the States concerned, provided the specific areas fit themselves properly to the use of these agencies; and

9. That the Conference recognize the desirability of setting up a continuing body, perhaps of the Commission form, centered as now in the President's Cabinet, and having as its function the investigation of problems of Federal land policy so far as they relate to recreation, and the consideration of measures to secure in practice that continuity and harmony of policy in the administration of Federal lands for recreational purposes which is the desire of all the interests concerned.

STATE PARKS AND FORESTS

III.

1. We urge upon our governments, local, county, state and national, the acquisition of land and water areas suitable for recreation and preservation of wild life as a form of the conservation of our natural resources, until eventually there shall be public parks, forests and preserves within easy access of all the people of our nation, and also to encourage the interest of non-governmental agencies and individuals in acquiring, maintaining and dedicating for public use similar areas; and

2. The enactment of legislation, including adequate appropriations, and the adoption of policies which will in-

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sure coöperation between the Federal Government and the States, and will promote the practice of forestry in its broadest sense and make the growing of timber by the private land owners safe and profitable.

SURVEY AND CLASSIFICATION OF RECREATION RESOURCES

IV.

1. That there should be a complete and comprehensive survey and classification of all recreational facilities and resources, both public and private, for the entire country;
2. That in the development of public reservations of recreational importance adequate systems of roads and trails connecting these reservations be provided.

PLANTS AND FLOWERS

V.

1. That we recognize that the education of school children and popular education through the press and other publications, and through churches, colleges and in other ways, offer the surest means of protecting wild plants and flowers; and we heartily commend the work of the volunteer organizations which have already exerted much influence and proved the effectiveness of popular education;
2. That every city and town should possess, as part of the nature study equipment of the public schools, and for public recreation, a wild park in which the native vegetation is absolutely protected;
3. That laws to uphold private owners in the protection of such plants as dogwood, mountain-laurel, holly and other valuable native vegetation should be enacted by all the states; and

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4. That we recognize the great need of a National Arboretum and Botanical Park and we urge that in this institution, when established, special consideration be given to the protection of our native plants and to the development of an adequate knowledge of their care and propagation for public education and recreation.

BIRDS

VI.

1. That the greatest problem in connection with wild bird conservation today is the provision of an effective system of education on a scale greater than any hitherto attempted and enlisting the assistance of all available agencies, including the press, the screen, and the radio ;

2. That the principal practical problems of the immediate future are better enforcement of existing laws, strengthening the statutes in certain states and constant watchfulness against loss of ground already won ;

3. That the importance should be emphasized, in the administration of bird laws, of basic surveys and inventories, of consideration of local conditions in the regulation of bag limits, of sanctuaries in connection with all public shooting grounds, and of expert personnel.

GAME AND FUR BEARING ANIMALS

VII.

1. That effort should be continued for the preservation of game animals through propagation, refuges, public shooting grounds, prevention of destructive practices, non-sale regulations, bag limits, licensing systems, special funds and other methods ;

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2. That special emphasis should be laid upon improvement and development of methods through non-political state game commissions with trained personnel, long tenure of service and broad administrative power; through conservation and reclamation of natural breeding or feeding grounds; through statistical surveys; and through efforts to obtain greater coöperation between state and private organizations interested in game; and

3. That campaigns of extermination against predatory animals should be discouraged, except as authorized by experts under state or Federal control.

4. *Whereas*, the efficient administration of wild life depends upon a detailed and accurate knowledge of the animals concerned;

Resolved, That all sportsmen should coöperate with museums or other scientific institutions and, so far as possible, make the results of their hunting available for study, research and permanent record.

5. *Whereas*, the decrease of hunting grounds, the rapid increase of hunters, liberal killing privileges and other destructive influences are now operating to diminish and exterminate game birds, animals and fishes;

Resolved, That steps should be taken promptly to secure reductions in bag limits and open seasons which will reduce the annual volume of game killing, both migratory and non-migratory, by large amounts where necessary; and

6. That the wild life on unreserved public lands should be administered where possible by the Federal Biological Survey.

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FISH

VIII.

Whereas, Fisheries and aquatic resources are of very great importance as a source of food supply and as a means of providing health-giving recreation to all classes of citizenry; and

Whereas, these aquatic resources have been dangerously depleted and are further threatened by stream pollution; therefore, be it resolved:

1. That scientific investigation furnishing a sound basis for the administration of all fishery resources be further encouraged by Federal, state and private agencies;

2. That propagation, stocking and rescue operations in public and private waters be greatly encouraged and enlarged;

3. That legislation is urgently needed, especially with respect to the uniformity of state laws, boundary waters, and anadromous fishes, such as salmon, striped bass, shad and sturgeon;

4. That Federal legislation should be secured stopping the interstate sale and shipment of black bass; and

5. That recognition should be taken of the fact that Federal and state appropriations for fisheries work have not kept pace with the growing needs of the country.

POLLUTION AND DRAINAGE

IX.

Whereas, increasing industrial expansion results in the exceedingly dangerous and destructive pollution of rivers and coastal waters, thereby rendering them uninhabitable

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to aquatic life of all useful kinds, seriously impairing shore bathing, and materially restricting possibilities for recreation through the accumulation of oily wastes; and

Whereas, the menace from fire hazard from floating oily wastes extends beyond the control of the nation and involves also the high seas; be it

Resolved, That solution of the problem must be sought first, by educating public opinion to bring about coöperation of all corrective influences; second, by securing detailed information concerning the extent, sources and nature of pollution; third, by encouraging technical investigation of exact conditions and means for transforming noxious into harmless substances; and fourth, by securing the adoption of corrective measures by National and state authorities; and

Whereas, the United States possess 80,000,000 acres of swamp and overflowed land important for equalizing stream run-off by holding rainfall, and in many instances serving as the breeding grounds of fish and wild life; be it

Resolved, That indiscriminate drainage is to be deplored as a source of conspicuous waste, and that careful investigation should be made in advance of all drainage operations to determine resultant benefits and injuries.

INTERNATIONAL RELATIONSHIPS

X.

1. That the Federal authorities be requested to enter into negotiations with nations constituting the Pan-American Association and others adjacent to the United States looking toward the formulation of conventions to

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protect migratory wild fowl and insectivorous birds whose habitat exists jointly in these countries and the United States; and

2. That we recognize the value of international athletic competitions as a means of promoting ideals of sportsmanship, mutual understanding, and respect among nations, and that we appeal to all government, civic and voluntary agencies for encouragement and support of the representatives of our country in these international competitions;

3. That the Consular Service be asked to effect exchange of information with foreign countries concerning governmental and municipal experience in developing physical training, playgrounds and outdoor recreation; and

4. That, in American institutions offering courses in recreation, special provisions be made for foreigners wanting to study American methods for use in their home countries.

FINANCIAL ENCOURAGEMENT OF OUTDOOR RECREATION

XI.

That the matter of financing the Outdoor Recreation Movement be referred to the Permanent Organization which it is hoped will succeed this Conference.

VALUE OF OUTDOOR RECREATION TO INDUSTRIAL WORKERS

XII.

1. That the President's Conference should emphasize the benefits which accrue from the provision of permanent

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outdoor recreation facilities within the reach of industrial workers and their families;

2. That the Conference should urge industries and mercantile establishments to provide, as opportunity offers, additional facilities for organized games; and to support municipal provision of wholesome outdoor recreational facilities;

3. That the Conference should call attention to the fact that activities of this kind require just as much thought, care, planning and supervision as any other phase of business, and that good intentions not founded upon knowledge, not guided by experience and training, have led to disappointment and failure in the past, as they have in operating departments; and

4. That the Conference call attention to the value for agricultural workers of all types of informal recreation and organized games which develop team play, quickness and bodily skill, and to the value for city dwellers, especially those of mature years, of such recreations as fishing, hunting, boating and camping, which involve a complete change of environment.

MUNICIPAL PARKS AND PLAYGROUNDS

XIII.

That in view of the massing of our population in cities and towns, which, so far as foreseeable will increasingly continue, and in view of the helplessness of children and youths to determine their own environment, and admitting their inherent right to a place in which to play, the Conference recognizes that it is the duty of every community

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to provide and operate either by public or private means, adequate space for play and recreation and that at least ten per cent of the area of a community should be regarded as the minimum requirement for this purpose, so distributed as to give all sections, as nearly as may be, equal accommodation both as to location and area;

And to this end in new city additions of ten acres or more this provision should be made a condition of such additions' acceptance by the municipalities;

And recognizing further that recreation, aside from its pleasure-giving object, is an important element in fostering good citizenship, it is the duty of the community to furnish on its playgrounds organized recreation under executive leadership of high character; and

That the President's Conference on Outdoor Recreation looks with approval on those agencies and institutions seeking to give specialized professional training to workers in the various fields of recreation.

EDUCATIONAL PROGRAM

XIV.

1. That the Conference endorse Nature Study in schools and the extension of the Nature Study idea to every American school and family;

2. That provision be made in the curricula of all Normal Schools and Colleges for the training of the necessary teachers and leaders in Nature Study; and

3. That the establishment of Museums of Natural History in National Parks will increase the educational and recreational value of the Parks.

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OUTDOOR RECREATIONAL NEEDS OF CHILDREN

XV.

1. That the Conference believes that the basic recreational needs of all children are the same and urges the value of a statement of average outdoor standards for children based on a thorough study; that such a statement will serve as a minimum which may be freely exceeded, but which we shall first endeavor to make universal;

2. That in view of the fact that 400 cities and towns of 8,000 or more are reported not to have a single playground or play leader, the Conference urges that these communities and all others take up the study of the outdoor recreation needs of their children, with the purpose of immediate action;

3. That the recreation needs of the country's 15,000,000 rural children should be studied and provided for in connection with the schools and in coöperation with agencies promoting helpful social activities as a means of enriching country life and counteracting the lure of the city;

4. That the Conference urges the basic importance of training leaders for recreational activities; it also calls attention to the need of recreation institutes with traveling instructors;

5. That the growth of our cities and communities has been such that inadequate provision has been made for the recreational needs of their people, and land within the corporation limits of such communities is costly; very definite coöperation should be sought with cities, towns and rural communities looking towards the acquisition by gift, or purchase by public funds, of tracts of land gen-

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erally unsuited for cultivation but well adapted for outdoor recreation, within reasonable distance from the centers of said cities, towns or communities, with the object of developing such areas as may be selected for general recreational centers open to all citizens and their families under regulations to be determined by said cities and communities; and

6. That commercial housing enterprises be urged to consider the setting aside of a certain proportion of land for the purpose of meeting the needs of the children for small interior playgrounds.

The work of the Conference was now over and Roosevelt as he dismissed it stirred his hearers by a final word of encouragement and of warning. He said:

"We all of us have a great idea. We have broken ground, we have laid the corner stone. We have dug the foundation and I think we have dug it well, but the building remains yet to be built. The resolutions are founded on what each one of us believes but they have not yet turned into accomplished facts. What each and every one of us has got to bear in mind is that we have not finished but have simply begun. What we must do now is to turn our ideals into facts accomplished, and work for the highest and best type of Americanism and the truest ideal of patriotism."

After the adjournment of the Conference the

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Executive Committee appointed various associations to collect facts for the use of the Council and made a final statement which closed with this paragraph:

“It is believed that through the close coöperation of such private agencies and Government agencies, federal, state, county and municipal, it will be possible eventually to evolve a National plan for outdoor recreation in which each agency, public and private, will have and play its part, to the end that our country will be a happier, pleasanter and healthier place in which to live.”

Geo. Bird Grinnell.

APPENDIX A

At the annual meeting of the Boone and Crockett Club held in New York December 20, 1923, the Club's Executive Committee recommended two subjects to the consideration of the members. These subjects were (a) the preservation of big game in federal areas in the West; and (b) the adoption of a plan for handling our game which shall touch the fundamentals of its conservation and call for intelligent and elastic administration in place of the clumsy, slow, repressive prohibitions to which we have so long been accustomed.

By a unanimous vote the Club approved and adopted the Committee's recommendations and ordered printed and distributed among sportsmen the two announcements of policy which follow. Of these the second, which deals with game administration, has already been published in *Outdoor America*, the magazine of the Izaak Walton League.

I. BIG GAME CONSERVATION IN FEDERAL AREAS

Our game is a national asset of great value to the welfare of the people and its preservation is, therefore, desirable. Its uses are both economic and spiritual, and the spiritual value obviously has an economic side.

Owing to the increasing population, constant encroach-

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ment on wild areas inhabited by game by economic pressure, the extension of roads, motor cars, in fact the whole rapid advance of material interests, the preservation of the big game of the West depends on its proper administration in National Game Refuges, National Parks, National Forests and National Monuments.

National Parks and National Monuments under the management of the National Parks Service should be breeding reservoirs where game may be enjoyed for æsthetic pleasure and the recreational uses of photography and study. The overflow of game outside may provide recreational use for sport and food. But sport should not be permitted in such federal areas. When the game increases beyond the food supply it must be officially reduced and the carcasses disposed of for economic use.

National Game Refuges and National Monuments situated in National Forests should be breeding areas where game not only serves for exhibition, but also for breeding purposes, so that, when possible, the surplus game may be transferred to restock other regions or provide an overflow to adjacent areas. Sport must not be permitted on smaller National Game Refuges under fence. But, the surplus game on other overstocked areas not removed by natural drift outside, should be reduced under the direction and regulations of the Secretary of Agriculture by any method he believes will best serve the purposes of game preservation.

By far the greater part of the game exists in the National Forests. Here a different and broader problem of administration is presented, and the game can be so regulated as to serve most completely all the uses which justify

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its preservation. It is one of the major products of the forests.

For more than thirty years the Boone and Crockett Club has maintained that all game in National Forests should be administered unconditionally by the Forest Service. The Club has full confidence that the Forest Service would administer this game with the same efficiency it has demonstrated in its administration of the other forest resources.

The Club recognizes that the National Forests were created for the purpose of perpetually preserving for the nation the maximum use of all their products—timber, forage, water and harmless wild life—and that the use of each must be so coördinated with that of the others, that the people may realize the fullest possible benefit. The numbers of game must therefore be adjusted accordingly. Any policy which might seek to increase game at such a sacrifice of other industrial uses that the maximum use of the forest would not result, would bring a just public reaction which would tend to destroy game conservation.

Properly to administer the game, the Forest Service must have the responsibility that goes with it. This cannot be assumed until the Forest Service shall be given independent control of the game. The Club hopes that finally all states will, as some states have already done, cede the control of their game on National Forests to the Forest Service.

Controlling the game, the Forest Service must intelligently decide the numbers to be retained on each national forest, and by scientific administration perpetuate the

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breeding stock to maintain those numbers undiminished. Refuges must be selected in which the game shall never be molested; smaller sanctuaries, where game may feed and rest, must be established in the areas where shooting is permitted; when practicable, sanctuaries should be made along highways and near tourist centers, for exhibition. In fact, the Forest Service must study and solve all questions connected with the complete administration of game, and regulate the uses of it for all purposes. But the numbers should never be permitted to increase above those which the available food supply can support in a state of health and vigor.

The Biological Survey has been entrusted with the administration of National Game Refuges and with the function of studying the problems of game conservation and of exterminating the natural enemies of game. This section of the work of this Bureau has so expanded that its advice and coöperation are necessary to every factor in the country involved in game preservation practice. The Club believes in the continued expansion of this work of the Bureau and considers its efficient service inseparable from intelligent game conservation.

Further, owing to unrestricted overgrazing and unregulated use of the Public Domain, the forage is greatly reduced and much of it is depleted. Such a condition is not only dangerous to the future of the live stock industry, but also to the game. The Club, therefore, emphasizes the need of complete regulation of grazing on this Public Domain, so that the productivity of the range may be restored and maintained.

Finally, the Boone and Crockett Club takes a much

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broader view of the whole problem of game conservation. It believes that this can be encouraged to the most successful results only by the completest development of all classes of recreational opportunities offered by all regions under national, state and local control. Recreation in National Parks and National Forests should be equally encouraged, and complete coöperation to that end should obtain between government bureaus themselves, and their relation with state and local projects. A permanent National Recreation Policy with a program is needed. To achieve this end the Club believes that the President should cause to be made a complete study of the question with a view to a definitive policy which will finally include a determination of the areas to be included in National Parks, National Monuments and other regions with recreational possibilities; a coöperative basis for their management and regulation; a plan of development for the purposes in view; in fact, a complete policy to be adopted and realized in the future.*

Only by the establishment of such a National Recreational Policy can maximum recreational opportunities be given to the nation and the numbers of people who will enjoy them be increased. It must sooner or later be realized that such a policy is vital to national welfare. Successful game conservation lies in the habit of mind gained from increasing development of recreational spirit among the people.

* Since the above was written President Coolidge has announced himself in favor of such a policy and has appointed a committee to put it into effect.

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II. FUNDAMENTAL PROBLEMS OF GAME CONSERVATION

With the growth of the recreational spirit among our people and the rapid increase of numbers who enjoy our game, the problems of methods proposed to save it are today receiving wider attention than ever before. The dangers of further decrease of game, in some cases even of its threatened extermination, have been so advertised in recent years that many interested in the conservation of wild life have been startled almost to the verge of panic. From one angle or another the alarm is being sounded, not so much because game is decreasing, as because the increase of population signifies an increase of gunners, and the advance of material interests makes possible greater opportunities effectively to use the guns.

The outlook is indeed serious. But the same and even greater dangers to the future of certain game existed several years ago. Then the numbers of waterfowl and shorebirds were much reduced and were steadily decreasing, and deer had greatly decreased in many eastern states. Yet along with the increase of gunners and of material advancement, waterfowl and shorebirds are now increasing, and deer in all states have become much more abundant. Such facts should cause reflection and a calm study of the causes which have produced this more favorable situation. Before becoming so much alarmed as hastily to propose certain remedies which in the past have failed, is it not better to seek to understand the fundamental problems of game protection and to try to apply them now and hereafter, so that our game in reasonable numbers may be saved?

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The methods commonly proposed to save game—chiefly by legislative enactments—although practiced in this country from early colonial times, began to receive more attention after 1850 and active interest after 1880. Reduction of bag limits, limited seasons and closed seasons, game refuges, license systems, law enforcement and several other policies were and are the common proposals; yet so far as they have been practiced they have never afforded a permanent solution of the problem. The game has continually decreased.

In Bulletin No. 41, published by the Biological Survey in 1912, Dr. T. S. Palmer, after much research and study gave us: "The Chronology and Index of the More Important Events in American Game Protection, 1776-1911." This is his introduction: "Game protection in the United States has been gradually developed during a period of nearly 300 years and has been marked by an immense volume of legislation. In no other country in the world have laws for the protection of game been passed in such numbers or amended so frequently. Among the characteristic features of American game legislation are the division of birds into three groups—game birds, non-game birds, and noxious species; the restrictions on hunting by non-residents; the limitations on the quantity of game that may be killed at certain times; the prohibition of export and sale; the system of enforcement by State officers; and the maintenance of this system largely by receipts from hunting licenses." With few exceptions, which will be noticed, all legislation since 1911 has been similar, and recent proposals to save game have advocated nothing, except more drastic applications of these methods. They

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are mainly prohibitive or restrictive. They have failed because of neglect to provide the right practical applications of some of them, and because others are not fundamental.

Yet some fundamental game protective policies have been enacted in legislation, and applied. The results have been immediate and game has either been protected or has increased.

The Yellowstone National Park, created by Congress in 1872, was a great federal refuge without legislative enactments to protect its game. In 1876 George Bird Grinnell first effectively called the attention of Congress to the threatened destruction of this game, and continued to agitate the subject until finally the public became interested, Congress gave heed to it, and in 1894 the Park Protection Act was passed. Here was a fundamental policy which has been applied to all National Park legislation—the complete protection of game within the limits of these Parks. Thus in them the game has permanently been saved. In 1894 Mr. Grinnell was the first to advocate the idea of non-sale of game, and he persisted in advocating this policy until the whole public had been educated to accept it, as soon as a method to apply it was found. This was another fundamental problem.

In 1904 Hon. George Shiras, 3d, prepared and introduced in the House of Representatives a bill to place all migratory birds under federal control. This principle was kept alive in Congress until it was finally enacted in the Migratory Bird Law and later replaced by the International Migratory Bird Treaty. Thus the policy of federal control of migratory birds was established in law so that

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all methods of game protection, including non-sale of game, could be immediately applied. The result has been the great and rapid increase of waterfowl and shorebirds. Efforts, continued for years without success, had been made to accomplish similar results through state legislation. And yet some states had passed laws containing regulations amply sufficient to save the game, if only they could have been applied throughout the country and enforced. It was the recognition of this policy of federal control, however, that was fundamental to the problem.

Population and industrialism are increasing faster than game. Is there any fundamental policy which, if it can be adopted, will meet such a situation and conserve the game? We think that there is—one that needs the endorsement of all who are interested in saving wild life and in outdoor recreation. The policy needed is one which calls for the complete *administration* of the game together with the responsibility which goes with it. Heretofore most of our legislation in behalf of saving game has dealt with the protective side of game conservation. Game protection, rather than game administration, has been our habit of thought. So long as we continue both in thought and by legislation to hold this attitude, we cannot make wise laws fast enough to meet the changing situations, nor can we quickly adopt methods which will prevent the destruction of the breeding stock of game.

The Boone and Crockett Club clearly recognized this fact in 1912. In its Game Preservation Report of that year it declared that the only solution of future game conservation lay in legislation recognizing completely the administration of game. The Club emphasized this in its

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report of 1915, and has since advocated it as the chief object to be attained.

Administration of game has been the centuries old policy in European countries, and game has been maintained in abundance and widely sold in the markets while the breeding stock has not been permitted to decrease below numbers believed to be for the general welfare of the people. But all over the world, wherever, without intelligent administration, game has been permitted to increase on areas being more and more encroached on by civilization, it has become depleted either by unwise killing or by death from starvation.

What is the significance of *Game Administration*?

The preservation of game is justified for three cardinal purposes—æsthetic pleasure; economic use; and recreational use, for sport, study and photography. The value of game cannot be comparatively measured, but there is general agreement that game is an asset of high importance to the people. The use of game must be coördinated with all industrial uses in such a way that our national life will enjoy the maximum benefits of all our resources. Therefore the numbers of game to be preserved must be adjusted accordingly.

The administration of game is nothing more than the plain common sense management of it so as to ensure a permanent breeding stock which will perpetually produce a given surplus to be used as completely as possible for all three purposes of game conservation. Although vastly more complex and difficult, the problem is similar to the simpler one of the management of cattle or chicken ranches.

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Game administration will study the whole problem of game in its relation to industrial interests and adjust the numbers to be preserved. It will make a complete study of the game itself, its habits, food, pathology, distribution and breeding; of the refuges and sanctuaries necessary to be made, and the destruction of natural enemies; in fact, of all scientific methods of increasing and preserving it for the purposes in view. It will seek to determine all the problems connected with game in such a way that every action taken in regard to it will be an intelligent one.

Each reader should ask himself if it is not simple common sense to believe that game can be better permanently preserved under an unconditional system of active, immediate administration than by the one, hitherto practiced for the most part in this country, which in a somewhat haphazard way attempts to protect game by passing rigid, restrictive laws, inelastic, and so to be changed only by the slow process of legislative enactment?

How can unconditional Game Administration be realized?

The first step toward its active realization will be to convince sportsmen's organizations throughout the country that it is necessary. No effective legislation in behalf of game in this country has been accomplished except through the interest and work of sportsmen's organizations. They are the main agencies which arouse favorable public judgment for game legislation, coördinate all the factors to promote it, and do the hard work necessary to achieve it. When any game legislation is proposed, sportsmen's organizations are called on to support or oppose it. Without sportsmen's organizations we could get no effec-

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tive support for or against game legislation, and selfish interests would soon overthrow all game protection. The sportsmen's organization is so vital to saving game that in its annual report for 1922 the Chief Forester of the National Forest Service called special attention to the need for the expansion of such organizations as the principal means of better improving the condition of game. Sportsmen's organizations can best be reached through sportsmen's and outdoor periodicals. These should fully discuss the need and value of game administration.

This step taken, we must concentrate on the broadest conception of game conservation—the continuous development of the recreational spirit of the people. The platform of the Izaak Walton League sets forth admirable principles of recreation which are printed at the beginning of its magazine.

A plan is needed—a plan of National Recreation, which shall study, define and include on a coördinated basis all national, state and local possibilities. Such a plan can be brought about only by the President, and he should be encouraged to accomplish it. All organizations interested in recreation of all kinds should join in the effort to bring forth such a program.

Is unconditional Game Administration practical in this country?

The Boone and Crockett Club believes that it is, as soon as we see the necessity for it and make up our minds to accomplish it. Suggestions to this end, like those of the Boone and Crockett Club, have not aroused a wide interest, for the reason that objections have been hastily brought forward which indicate that most of us reflect not

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on the administrative, but on the restrictive aspect of game protection to which we have so long been accustomed.

It is also asserted that game can be administered in European countries where most of it is on large landed estates wholly subject to regulation by the owners, but that in this country where no such system of land tenure prevails, there is no practical method of game management on a large scale. Such objections, however, are not based on a study of the situation.

For more than thirty years the Boone and Crockett Club has maintained that all wild life in the National Forests should be administered unconditionally by the Forest Service. Here is a great Federal Bureau having complete control of all the products of the National Forests, except the game which is one of its major products. This vast organization patrols and guards each forest and administers them non-politically and efficiently, wholly for the public welfare now and in the future. The deer forests of Scotland comprise 3,000,000 acres with 150,000 deer. Most of our big game in the West ranges in the National Forests, which include 157,000,000 acres of wild areas, occupied, according to actual estimate, by 500,000 deer and large numbers of all other big game, and game birds and waterfowl. Give the Forest Service control of this game and we shall have complete administration of it on a scale never known in Europe. This should not be attempted by federal legislation. The individual states themselves must finally realize the necessity for it and as some states have already done, must cede the control of this game to the Forest Service, at the same time reserving to themselves all the net revenue to be derived from it.

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The Alaska Game Law, passed in 1902, contained a clause giving the Secretary of Agriculture power, limited to restrictive measures only, to administer all the game. It is now admitted by all sportsmen, by Alaska residents, and by all others interested, that, if game in Alaska is to be saved, the Secretary of Agriculture must have complete authority to administer the game. With that end in view, the Alaska delegate has presented to Congress a bill which grants this power to the Secretary, who must receive the advice of a local game commission before he shall make regulations for the game. All factions have agreed to this bill. Its administrative feature will surely receive congressional approval. Here will be Game Administration applied on a scale greater than ever before anywhere in the world.

We can find no good estimate of the total number of game birds existing on all European estates together, but certainly they are not superior to those both in all National Forests and on lands controlled by private clubs in this country. Private clubs, once they understand the necessity for it, can administer their game subject to state and federal laws. Already some, having large land areas under control, are making preliminary studies with a view to intensive game management. All clubs, however, can more completely administer their game as soon as complete administration by the states can be put in effect.

But how can states administer their game?

By recognizing the necessity for such administration, granting the power, and definitely fixing the responsibility for the results. This can be accomplished by appointing non-partisan, expert game commissions with long tenure

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of office and full authority independently and unconditionally to administer the game. A commission having such complete administrative authority could immediately, as the conditions might demand, apply all known methods of game regulations and preservation in any part of or throughout the state. It would become expert in dealing with the whole problem of Game Administration and would cooperate with clubs and federal agencies in control of game.

Objections might be made to entrusting such elastic powers to a game commission on the ground of politics. Such objections would, of course, have weight but usually they would not, we believe, be well founded. Throughout this country at present, with rare exceptions, game commissions are composed of those having received political preference, yet many of them include excellent men who have achieved splendid results, some even commanding national attention. Having only to enforce laws and advise legislatures, such bodies now have little responsibility. The main responsibility for game laws lies in the legislative body which makes them, and here responsibility is intangible. Should a commission be given full powers to regulate and control the game, the responsibility for success or failure would be localized on it and on the agency which appointed it; and long tenure of office would decrease the political dependence of its members. It is common sense to believe that a game commission thus made fully responsible for its acts, would be less likely to act with indifference, neglect, or with careless thought of the probable results. We are not wholly without experience in Game Administration, and in so far as it has been prac-

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ticed, the results have completely justified it. Under the present Alaska game law the Secretary of Agriculture has, by the advice of the Alaskans themselves, made frequent use of his administrative authority to prohibit the killing of game in sections where it has been threatened. This has saved the game. Had he possessed no administrative power and been obliged to await authority by congressional action, the game in these sections would have been exterminated.

The Migratory Bird Law, for the most part, is one granting wide powers of administration. Every year the Secretary of Agriculture calls together the Advisory Board, composed of experienced game conservationists from various parts of the country, who recommend changes in the regulations only after careful study and as full knowledge as can be obtained of the situation. The results have been a steady increase of wildfowl and shorebirds. It has been proposed, with the best of intentions but without careful study of conditions, that this Advisory Board should recommend drastic cuts in bag limits and seasons, not because waterfowl are decreasing (they are increasing), but because population is increasing. Such a method of applying game protective remedies is unsound because it is illogical, haphazard and restrictive, rather than administrative, based on a study of the situation. We may have complete confidence that the Secretary, having the administrative authority, will so use it as to maintain the full number of waterfowl that the food supply will support.

The evidence gathered by the Biological Survey, the active administrator of the law, is that waterfowl are

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rapidly increasing to the limits of the food supply. Should they be permitted to increase beyond it, wholesale starvation and death to vast numbers would follow. Because marshes and feeding grounds have been and are being drained, the food supply for waterfowl is decreasing. Should this continue, ducks could not be maintained at their present numbers and there would be serious danger of great loss. To prevent such a calamity it has been necessary to have the Game Refuge and Public Shooting Grounds bill introduced in Congress. Its main purpose is to find a means of preserving and administering the feeding areas of wildfowl. It is supported by all sportsmen in this country and its enactment into law is a vital necessity to the perpetuation of our wildfowl.

Limited administration of game by state game commissions is gradually being realized in many state laws. It has usually taken the form of conditional powers to curtail or prohibit the killing of game. Even this is a step in advance and the results have been most favorable. But as yet no state understands the significance and value of complete administration of its game, and until the advantages of it are clearly recognized we cannot hope for rapid progress in accomplishing it.

The Izaak Walton League has caused to be presented in Congress a most worthy bill setting aside as a refuge for wild life, including plants and fish, the Upper Mississippi National Wild Life Refuge, to be administered exclusively and unconditionally by the Secretaries of Agriculture and of Commerce. This is a project of Game Administration, and nothing is more encouraging than the fact that this League of large and wide national mem-

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bership should thus recognize the necessity of the administration of game.

To assist the administration of wild life in this country we have the Biological Survey, a Bureau of the Department of Agriculture. From the time of its establishment, thirty-nine years ago, it has intensively studied wild life and all problems connected with it, including game protective practice, administration and legislation. It is the highest authority in the country on all matters pertaining to wild life. It has coöperated with every game protective organization, federal, state, local and private. It is the great clearing house of information on these subjects. No other country has a Government Bureau of this kind. When Game Administration shall be undertaken, the advice and expert knowledge of this Bureau are available. When it shall have advanced, the coöperation of the Biological Survey will be invaluable. It has a great force of experienced, technical experts in exterminating predatory animals. Its wide outlook and knowledge will be of the greatest advantage in assisting the states to coördinate all their activities with game administration problems.

Along with Game Administration should be included that of all wild life, birds, fish and fur-bearing animals. A discussion of these, however, is not within the scope of this paper.

Enough has been said, we hope, to show the necessity for Game Administration and the possibilities of finally establishing it. But we must clearly face the difficulties involved in accomplishing it. Our present historical game protective policies have become the custom of our thought, and cannot easily be changed. Some state constitutions

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may not permit the delegation of sufficient authority to game commissions, and states may pause before they recognize the necessity of ceding such administration to commissions and to the Forest Service. Other difficulties might be mentioned; and yet, whatever the obstacles, it is not impossible finally to overcome them. It is a matter of education. Advanced ideas of game conservation have often grown slowly, and even when understood their practical realization has been slow. The very necessity for Game Administration should stimulate all to work for it. But it must come gradually, step by step, each one gained showing such advantages that the next will be reached more rapidly.

All magazines devoted to outdoor life and recreation should substitute the term *Game Administration* for game protection and serve as propagandists for the idea. They should become the leaders in advancing it. All sportsmen should study it and reflect on its significance and advantages. It should be made a topic of discussion in all meetings and gatherings held to promote the purposes of recreation, and every possible means should be taken to get it into the thoughts of the people.

Finally, there is one fact which should be clearly understood and settled affirmatively in the minds of all. We should all have the highest ideals, but game conservation must be regarded not from a sentimental but from a supremely practical point of view. With its future full of dangers, the fate of game must not be risked to await the fulfillment of every ideal we have nurtured for its preservation. Before they can be realized the game will disappear. What is needed is to advocate the best action that

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is practically possible. At present in this country there is a tendency—apparently very wide because of the publicity given to it, but in reality very limited—to advocate preserving game exclusively for æsthetic purposes. This view seeks to exclude sport as one of the cardinal purposes of game conservation. Such views, however sincere and well-meaning, not only cannot produce effective results, but they harm and actually retard the progress of game conservation. The great majority of interested people work to conserve game so that it may serve all its purposes. Nearly all the actual workers for game conservation wish, if possible, to enjoy sport, but at the same time they have due regard for the other purposes to be served by game. These are the only persons who have the power to save the game and perpetuate its numbers, and any policy which might tend to discourage their active interest would, in the end, have no other result than game destruction.

Therefore, a fundamental problem of effective game conservation is the attainment of a practical attitude of mind which squarely faces these facts. If, with such an attitude of mind, we shall adopt as our goal the conservation of game for all its purposes, with Game Administration as a means of accomplishing it, shall seek a policy of National Recreation to increase the recreational spirit of the people, and shall work actively and perseveringly toward these ends, we may feel confident of perpetuating the future supply of our game.

THE BOONE AND CROCKETT CLUB,
By the Executive Committee.

APPENDIX B

THE REDWOODS

In connection with the account of the "Save the Redwoods League" by Madison Grant, a few paragraphs are given from his address in August, 1921, at the dedication of the Bolling Memorial Grove in California.

These remarks refer eloquently to past wild life destruction in the United States, and urge that the beauty of the land we love shall be preserved by protecting and restoring the natural products that we have so recklessly wasted. He said in part:

It is a peculiar privilege to be present on this occasion when for the first time in our history a living memorial to a fallen soldier has been selected from among the natural features of the land for which he gave his life. Inanimate monuments of bronze, of marble, and of granite strew the land, many of doubtful art value, but all of them symbolic of the recognition by their countrymen of their sacrifice for the common weal. It was a thought not merely happy, but one of possibly far-reaching consequences, that inspired Dr. John C. Phillips of Boston to select for his brother-in-law perhaps the most beautiful and permanent memorial ever chosen for a soldier. The very air of these groves is redolent with the suggestion of immortality. The trees themselves in their brave resistance to axe and fire symbolize better than anything else I know this very idea. . . .

Colonel Bolling was the first officer of rank to make the supreme sacrifice, and the circumstances surrounding his death, the story of how he refused to surrender and fought against

Redwoods

overwhelming odds in the shelter of a shell hole until his pistol was empty, forms one of the stirring chapters of the Great War. Colonel Bolling symbolizes many another officer of equal bravery who was perhaps less fortunate in the dramatic surroundings of his death. He further symbolizes the whole of that amazing army of Americans who were swept from civil life into the turmoil of a war which had already endured for several years.

These American soldiers in this war and in former wars, in spite of much that has been said about the ideals they fought for, went to battle in the simple faith of children and so died in the simple faith of children, for the one thing that is worth fighting for, for the one thing that men die for without hesitation,—and that is their country.

And what is their country? It is the inheritance that God gave us of forests and fields, of rivers and streams, of mountains and plains. They did not give their lives for a field of blackened stumps nor for rivers drained dry in summer or turned into sewers of factory waste. They did not give their lives for a mountain-side rent open for minerals and coal. They gave theirs for a country that had trees on the hillsides, that had fish in the streams, that had birds in the air, that had feather and fur in the forest. Let us therefore on this solemn occasion in dedicating this grove of Redwoods to the memory of Colonel Bolling resolve that we too shall continue the effort to preserve for those that come after us some portion of the heritage that was ours.

No more destructive animal has ever appeared on the face of the earth than the American back-woodsman with his axe and his rifle. Since the Civil War, we have plundered half a continent. In fifty years we have killed all the animals of the plain that in their millions had lived there for tens of thousands of years. The bison has long since gone, except where protected. The antelope is all but gone, the herds of elk are dwindling fast, and your mighty California grizzly is utterly extinct, so that even a battered skull is a highly prized trophy for a museum. The smaller animals and birds are many of them

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verging on extinction. Our fish in their abundance have utterly disappeared from many streams in the East, and if it were not for artificial restocking, would have entirely vanished. In many parts of the country, like the Red River Valley, the richest soil known to man has been exhausted in a generation.

But bad as this slaughter of life has been, much of it can be restored if only we have a place of refuge for it when it is brought back. That refuge can be only the forests, and what have we done with our forests? Chopped them, and burned them, and wasted them: and now almost the last of the great stands of timber are here on the Pacific slope. We are in the center of the best of them. Probably nowhere on earth does there exist a forest to compare in continuous grandeur and unqualified beauty with the Redwoods that are found along the Eel River and to the north. We have reason to believe that no finer forest ever did exist on earth during the millions of years since vegetable life first appeared. It is, therefore, not merely a privilege, but it is a sacred duty for Americans to guard and to preserve what little is left of this heritage our fathers so cheerfully wasted. This is not a matter of sentimentalism. It is not a vague idealism. It is a reality. These trees are part of our national monuments, our national inheritance, of far more value to ourselves and to those who come after us than any of the works of man.

APPENDIX C

FEDERAL MIGRATORY BIRD LEGISLATION

This chronology of events is here printed as a matter of history. It refers to statements on pp. 234-236.

- 1904, Dec. 5. Introduction by Hon. Geo. Shiras, 3d, of original Migratory Bird Bill, 58th Cong., H.R. 15,601.
- 1908, Dec. 8. Introduction of Weeks Migratory Bird Bill, 60th Cong., H.R. 22,888.
- 1909, May 28. Introduction of the Lacey modifications of the Weeks Migratory Bird Bill, 61st Cong., H.R. 10,276.
- 1911, Apr. 4. Introduction of Weeks Migratory Bird Bill, 62d Cong., H.R. 36.
- 1911, May 17. Introduction of McLean Migratory Bird Bill, 62d Cong., S. 2367.
- 1911, June 28. Introduction by McLean of Resolution to amend the Constitution, 62d Cong., S.J. Res. 39.
- 1912, July 1. Weeks Bill, discussion in the House, Record, pp. 8547-8549.
- 1912, Mar. 6. Simultaneous hearings on Migratory Bird Bills before House Committee on Agriculture and Senate Committee on Forest Reservations and the Protection of Game. Arranged by the American Game Protective Association.
- 1913, Jan. 14. Introduction by Senator Root of first resolution providing for international conventions for protection of migratory birds, 62d Cong., S.R. 428.
- 1913, Jan. 22. Passage of Weeks-McLean Bill in the Senate, Record, Vol. 49, pp. 1870-1871.
- 1913, Mar. 3. Passage by Congress of Weeks-McLean measure.

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- 1913, Mar. 4. Approval of Migratory Bird Law by the President.
- 1913, Apr. 7. Introduction by Senator McLean of Senate Resolution providing for international conventions for the protection of migratory birds, 63d Cong., S.J. Res. 25.
- 1913, June 23. Publication of Proposed Regulations and Explanations.
- 1913, July 7. Passage of Senate Resolution providing for international conventions for the protection of migratory birds.
- 1913, Aug. 19. Introduction of a bill by Mr. Mondell to repeal the Migratory Bird Law, 63d Cong., H.R. 7506.
- 1913, Oct. 1. Proclamation of the President containing the first regulations for the protection of migratory birds.
- 1916, Aug. 16. Signing of the Treaty between the United States and Great Britain for the protection of migratory birds in the United States and Canada.
- 1916, Aug. 29. Ratification by the Senate of the Migratory Bird Treaty.
- 1916, Sept. 1. Ratification by the President of the Migratory Bird Treaty.
- 1916, Oct. 20. Ratification by Great Britain of the Migratory Bird Treaty.
- 1916, Dec. 7. Exchange of ratifications between the United States and Great Britain.
- 1916, Dec. 8. Proclamation by the President of the Treaty.
- 1917, Jan. 13. Introduction by Senator Hitchcock of first bill or "Enabling Act" to give effect to the Treaty, 64th Cong., S. 7858.
- 1917, Jan. 13. Introduction by Mr. Flood of bill to give effect to the Treaty, 64th Cong., H.R. 20,080.
- 1917, Apr. 10. Introduction by Senator Smith of Arizona (for Senator McLean) of bill to give effect to the Convention between United States and Great Britain for the protection of migratory birds; known as the "Enabling Act"—65th Cong., S. 1553.
- 1917, Apr. 10. Introduction of same bill by Mr. Flood, 65th Cong., H.R. 2612.

Migratory Bird Law

- 1917, July 30. Passage in the Senate of Senate Bill 1553—"Enabling Act."
- 1917, Aug. 29. Passage of Canadian "Enabling Act" under Migratory Bird Treaty.
- 1918, May 11. Date of taking effect of regulations under Canadian "Enabling Act."
- 1918, June 6. Passage in the House of the "Enabling Act" (S. 1553).
- 1918, June 7. Senate Bill 1553 sent to conference.
- 1918, June 28. Adoption by House of Conference Report on "Enabling Act."
- 1918, June 29. Adoption by Senate of Conference Report on "Enabling Act."
- 1918, July 3. Signed by the President.
- 1920, Apr. 19. U. S. Supreme Court holds constitutional the Migratory Bird Treaty Act.

APPENDIX D

OUR NATIONAL PARKS

(Number, 19; total area, 10,859 square miles.)

| <i>National parks in order of creation</i> | <i>Location</i> | <i>Area in square miles</i> | <i>Distinctive characteristics</i> |
|--|------------------------------|-------------------------------------|---|
| Hot Springs 1832 | Middle Arkansas | 1½ | 46 hot springs |
| Yellowstone 1872 | Northwestern Wyoming | 3,348 | Geysers; petrified forests; canyon of the Yellowstone, remarkable for brilliant coloring |
| Sequoia 1890 | Middle eastern California | 252 | The Big Tree National Park; 12,000 sequoia trees, some 25 to 36 feet in diameter |
| Yosemite 1890 | Middle eastern California | 1,125 | Famous valley; lofty cliffs; waterfalls of great height; big trees; high Sierra |
| General Grant 1890 | Middle eastern California | 4 | Created to preserve the great General Grant Tree, 35 feet in diameter; near Sequoia National Park |
| Mount Rainier 1899 | West central Washington | 324 | Largest accessible single peak glacier system; 28 glaciers |
| Crater Lake 1902 | Southwestern Oregon | 249 | Deep lake in crater of extinct volcano |
| Wind Cave 1903 | South Dakota | 17 | Cavern with miles of galleries |

National Parks

| <i>National parks in order of creation</i> | <i>Location</i> | <i>Area in square miles</i> | <i>Distinctive characteristics</i> |
|--|--------------------------|-------------------------------------|---|
| Platt 1904 | Southern Oklahoma | 1 $\frac{1}{8}$ | Many sulphur and other spr'gs |
| Sullys Hill 1904 | North Dakota | 1 $\frac{1}{6}$ | Small park with woods, streams and a lake; important wild-animal preserve |
| Mesa Verde 1906 | Southwestern Colorado | 77 | Notable and well-preserved prehistoric cliff dwellings |
| Glacier 1910 | Northwestern Montana | 1,534 | Rugged mountain region; 60 small glaciers; many lakes |
| Rocky Mountain 1915 | North middle Colorado | 397 $\frac{1}{2}$ | Snowy range, peaks of 11,000 to 14,250 feet |
| Hawaii 1916 | Hawaii | 118 | Three separate areas; Kilauea and Mauna Loa on Hawaii, Haleakala on Maui |
| Lassen Volcanic 1916 | Northern California | 124 | Only active volcano in the United States proper; Lassen Peak 10,465 feet; Cinder Cone 6,879 feet |
| Mount McKinley 1917 | South central Alaska | 2,200 | Highest mountain in North America; northern game ref- uge |
| Grand Canyon 1919 | North central Arizona | 958 | Great example of erosion and a sublime spectacle |
| Lafayette 1919 | Maine coast | 8 | Group of granite mountains upon Mount Desert Island |
| Zion | Utah | 120 | Marvellous painted canyon of Virgin River |

APPENDIX E

HISTORY OF MT. MCKINLEY NATIONAL PARK

A detailed abstract of correspondence and summary of events as to this Park may be useful to some future student of our National Parks. The originals of these papers have been preserved.

Letter 1. H. P. Karstens, Fairbanks, Alaska, to H. M. Albright, Washington, D. C., July 25, 1918.

"While I worked for Sheldon as guide, perhaps in 1906, he suggested that the country on Toklat River would make a fine park and game preserve." Names people still in the Kantishna country who know Sheldon wished to set that country aside for a park.

2. C. Sheldon, Woodstock, Vermont, to E. W. Nelson, Washington, D. C., October 10, 1915.

Believes time now ripe to push through Congress bill to establish Denali National Park; Denali—Mt. McKinley—to be its center. Plans contemplated.

3. Hon. James Wickersham, Washington, D. C., to C. Sheldon, New York, December 8, 1915.

Acknowledges letter of December 3, suggesting Mt. McKinley Park. Doubtful about the matter because it might interfere with prospectors. (Sheldon's reply suggests bill be so framed as to remove Wickersham's objections.)

4. Wickersham, Washington, to Sheldon, New York, January 3, 1916.

Promises careful attention to McKinley Park bill when put in shape by Mr. Mather and others.

Mt. McKinley Park

5. Henry G. Gray, Secretary, Boone and Crockett Club, New York, to C. Sheldon, New York, December 21, 1915.

Transmits resolution of Boone and Crockett Club, endorsing Mt. McKinley National Park project and appointing Sheldon and Grant committee to do various things and to advocate the plan as the plan of the Boone and Crockett Club.

6. Sheldon, New York to S. T. Mather, Washington, December 15, 1915.

Proposes the establishment of the Park and says that he has been in correspondence with Wickersham.

(The matter had been placed before the Boone and Crockett Club Game Committee December 13, and approved as by above resolution.)

7. S. T. Mather, Washington, to Sheldon, New York, December 16, 1915.

Asks Sheldon to come to Washington and confer with him or with R. B. Marshall, Supt. National Parks. Suggests coming now, as Riggs, of Alaska Engineering Commission, is there.

8. Sheldon to Mather, December 18, 1915.

Prefers to postpone visit to Washington till he can see both Mather and Secretary Lane. Wickersham's attitude will depend on that of Lane.

9. Mather, Washington, to H. F. Osborn, New York, December 18, 1915. (Refers to Letter 12.)

Acknowledges election to associate membership in Boone and Crockett Club. Has already heard from Sheldon about proposed national park in Alaska, and has taken steps to go into matter.

10. Enos Mills, (Colorado) Washington, to Sheldon, New York, December 18, 1915.

Asks for fuller information about proposed national park in Alaska and if they can help the matter along. Acknowledges Boone and Crockett Club's help in creation of Rocky Mountain National Park.

11. Enos Mills, Colorado, to Sheldon, New York, December 22, 1915.

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Acknowledges reply of December 20 and hopes to be present in Washington when Sheldon has conference with Mather.

12. Refers back to Letter 9. H. F. Osborn, New York to Mather, Washington, December 16, 1915.

Announces Mather's election to associate membership in Boone and Crockett Club and commends Sheldon to Mather. (Memorandum. Herschel Parker lunched with Sheldon December 27, and Sheldon consulted him about boundaries of the Park. Parker at once consulted Browne.)

December 29, Sheldon had conference with Mather and others in Washington.

13. R. S. Yard, Washington, to Grinnell, New York, January 6, 1916.

Saw Sheldon in Washington, hopes he will keep his hand on the business (of Parks) until it actually comes before Congress as a good bill.

"Meantime Belmore Browne of the Campfire Club turned up in Washington yesterday upon the same errand. He is Chairman of the Conservation Committee of that Club and he came down here to see if there was anything at all being done toward getting McKinley made a National Park. He was much surprised to find that Mr. Sheldon and the Boone and Crockett Club were first in the field. He is going to get in touch with Mr. Sheldon immediately upon his return."

14. Yard, Washington, to Sheldon, New York, January 7, 1916. Refers to visit "yesterday" by Belmore Browne, talking Mt. McKinley.

15. Sheldon, New York, to Yard, Washington, January 8, 1916.

Advises consultation with Wickersham so that he shall be interested. Mather spoke before whole Boone and Crockett Club Thursday night (Annual Meeting) and received with enthusiasm. Belmore Browne will be of much assistance. Professor Parker suggested the south lines.

16. H. G. Gray, Secretary, Boone and Crockett Club, New York, to Sheldon, New York, January 10, 1916.

Transmitting resolution adopted at Annual Meeting of the Club held January 6, approving plan for Mt. McKinley

Mt. McKinley Park

Park, appointing Sheldon and Grant committee to do various things and to advocate the plan prepared as the plan of the Boone and Crockett Club.

17. Thomas Riggs, Jr., Washington, to Sheldon, New York, January 12, 1916.

Is drafting bill. Asks for description of boundaries; says Belmore Browne was down there for a few days after S. was in Washington.

18. Sheldon, New York, to Riggs, Washington, January 13, 1916.

Sends description of boundaries, hopes Park may be called Denali, talked with Browne day before, suggestions as to securing Wickersham's approval.

Memorandum attached. Penciled notes of the limits of the Park drawn by C. Sheldon, and by him sent to Riggs, January 15, 1916.

19. Riggs, Washington, to Sheldon, New York, January 14, 1916.

Acknowledges memo of boundaries, encloses rough draft of bill, believes McKinley better known name than Denali, decides not to say anything about game refuges advocated by Belmore Browne.

20. Copy of the bill drafted by Riggs and sent to Sheldon.

- 20a. Sheldon, New York, to Riggs, Washington, January 15, 1916.

Suggests certain changes in the bill.

21. Riggs, Washington, to Sheldon, New York, January 17, 1916.

Acknowledges letter of January 15 and believes the suggested changes should be made.

22. Sheldon to Riggs, January 25, 1916.

Asking as to progress of the matter and promising to go to Washington with others when Riggs is ready for a conference.

23. Riggs to Sheldon, January 26, 1916.

"Will notify you."

24. Riggs to Sheldon, January 28, 1916.

Detail as to the bill. Memorandum from Browne acknowledging receipt of something.

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25. Sheet of carbon copy which has something to do with boundaries of proposed Park. (?) Changes.
26. Sheldon to Riggs, January 29, 1916.
Approving changes.
27. Sheldon to Mather, Washington, February 8, 1916.
Urging meeting about the bill in Washington.
28. Mather to Sheldon, February 9, 1916.
Promises to arrange for a conference.
29. Sheldon to Mather, February 26, 1916.
Advises of his departure for Mexico in two or three days. States that it has been arranged to put the matter of the bill in the hands of John B. Burnham, and that he will organize people throughout the country in behalf of the bill.
30. Sheldon to Mather, March 25, 1916.
Has just returned. Speaks with enthusiasm of the limits of the proposed McKinley Park.
31. Mather to Sheldon, April 3, 1916.
Bill will soon be transmitted to Wickersham. Unable to suggest a Senator to introduce it.
(Sheldon pencils note, "I advise Senator Pittman.")
32. Copy of H.R. 14775, introduced by Wickersham April 18, 1916, to establish the Mt. McKinley National Park in the territory of Alaska.
33. S. 5716, introduced by Mr. Pittman, April 22, 1916, same title.
34. A plea for Mt. McKinley National Park, Belmore Browne and R. S. Yard, published by the Campfire Club of America, Boone and Crockett Club, American Game Protective Association, 1916.
35. Hearings before a sub-committee of the Committee on Public Lands on H.R. 14775 held Thursday, May 4, 1916.
36. Hearing before the Committee on Territories, United States Senate, on S. 5716, held May 5, 1916.
37. Sheldon to Mather, May 5, 1916.
Report of interviews with Senator Pittman and Wickersham; and expression of hope that bill establishing Park may be passed even if not in perfect shape.

Mt. McKinley Park

38. John B. Burnham, New York, to Sheldon, Woodstock, Vermont, June 2, 1916.
Report of trip to Washington; bill is being held up in House apparently because of friction between Wickersham and sub-committee over Lane's amendment.
- 38a. Sheldon to Mather, June 13, 1916.
Indirectly suggests withdrawal of Lane amendment to the bill. Suggests that McClintic be influenced to report bill without amendment.
39. H. M. Albright, Washington, to Sheldon, New York, June 15, 1916.
Mather absent; bill came up in Senate about two weeks ago; was objected to and failed.
40. McClintic, Washington, to Burnham, New York, June 28, 1916.
Letter as to progress of bill. This letter sent to Sheldon with Letter 41.
41. Burnham, New York, to Sheldon, Vermont, July 7, 1916.
Detailed report of visit to Washington, telling of friction between Wickersham and Interior Department on account of amendment.
42. Burnham, New York, to Mather, Washington, July 7, 1916.
Letter which accompanied copy of Burnham's letter to Sheldon of July 7, sent to Mather.
43. Burnham to Sheldon, Vermont, July 21, 1916.
Enclosing letter from Mather's secretary, showing that Lane has withdrawn amendment.
44. Copy of letter from Mather's secretary to Burnham, July 20, 1916, as above, sent to Sheldon.
45. Wickersham, Washington, to Sheldon, Vermont, July 26, 1916.
Reference to Lane's delay in withdrawing amendment.
46. Congressional Record, September 8, 1916, pp. 16,548-549, and p. 16,551. Discussion of bill amendments and final passage.
- 46a. Copy of S. 5716, 64th Congress, 2d Session, bill to establish Mt. McKinley National Park.
47. Program of National Park Conference, January 26, 1917.

Hunting and Conservation

January 4, Sheldon spoke in the afternoon, and in the evening Stephen R. Capps delivered an illustrated lecture.

48. Mather to Sheldon, Washington, January 11, 1917.

Congratulations on his speeches and on his coming to Washington.

49. Sheets from *National Geographic Magazine*, January, 1917, illustrated article on proposed McKinley National Park by Stephen R. Capps, of the United States Geological Survey.

50. H.R. Report 1273, 64th Congress, 2d Session, January 10, 1917, by Mr. McClintic on Senate Bill 5716.

51. Pp. 4026-4028 of Congressional Record, February 9, 1917; discussion in House and passage of bill as amended.

52. P. 4134 of Congressional Record, February 20, 1917, concurrence of Senate with House amendments.

53. Act to establish Mt. McKinley National Park, S. 5716, approved February 26, 1917.

OFFICERS, CONSTITUTION AND LIST
OF MEMBERS FOR THE
YEARS 1923-1924

The Boone and Crockett Club

Officers from Its Foundation

President

| | |
|--------------------------------|-----------|
| Theodore Roosevelt | 1888-1894 |
| Benjamin H. Bristow | 1895-1896 |
| Wm. Austin Wadsworth | 1897-1918 |
| George Bird Grinnell | 1918- |

Vice-President

| | |
|-----------------------------------|----------------------|
| Theodore Roosevelt | 1911-1913 |
| Charles Deering | 1897-1904 |
| Walter B. Devereux | 1897-1922 |
| Howard Melville Hanna | 1897-1904 |
| William D. Pickett | 1897-1912 |
| Frank Thomson | 1897-1900 |
| Owen Wister | 1897-1902 |
| Archibald Rogers | 1903-1922 |
| Winthrop Chanler | 1908-1911 |
| Arnold Hague | 1907-1917 |
| Madison Grant | 1913- |
| George Bird Grinnell | 1913-1918 |
| Charles Sheldon | 1918- |
| Charles Stewart Davison | 1920-1922, 1924-1926 |
| Col. F. A. Boutelle | 1923. |
| Col. Charles J. Crane | 1923. |
| William Lord Smith | 1923. |
| Dr. Hugh Cabot | 1924-1926 |
| Gen. Roger D. Williams | 1924-1926 |

Hunting and Conservation

Secretary and Treasurer

| | | | | | | | |
|----------------------|---|---|---|---|---|---|-----------|
| Archibald Rogers | . | . | . | . | . | . | 1888-1893 |
| George Bird Grinnell | . | . | . | . | . | . | 1894-1895 |
| C. Grant La Farge | . | . | . | . | . | . | 1896-1901 |

Secretary

| | | | | | | | |
|-------------------------|---|---|---|---|---|---|-----------|
| Alden Sampson | . | . | . | . | . | . | 1902-1903 |
| Madison Grant | . | . | . | . | . | . | 1903-1913 |
| Henry G. Gray | . | . | . | . | . | . | 1913-1917 |
| Kermit Roosevelt | . | . | . | . | . | . | 1917-1918 |
| Charles Stewart Davison | . | . | . | . | . | . | 1918-1920 |
| Kermit Roosevelt | . | . | . | . | . | . | 1920- |

Treasurer

| | | | | | | | |
|-----------------------|---|---|---|---|---|---|-----------|
| C. Grant La Farge | . | . | . | . | . | . | 1902-1912 |
| William Redmond Cross | . | . | . | . | . | . | 1913- |

Members of Editorial Committee

| | | | | | | | |
|----------------------|---|---|---|---|---|---|-----------|
| Theodore Roosevelt | . | . | . | . | . | . | 1888-1919 |
| George Bird Grinnell | . | . | . | . | . | . | 1888- |
| Charles Sheldon | . | . | . | . | . | . | 1919- |

Members of Executive Committee

| | | | | | | | |
|-------------------------|---|---|----------|----------|------------|-----------|-----------|
| Wm. Austin Wadsworth | . | . | . | . | . | . | 1893-1896 |
| George Bird Grinnell | . | . | . | . | . | . | 1893-1894 |
| Winthrop Chanler | . | . | 1893-99, | 1904-07, | 1913-16, | 1924-26 | |
| Owen Wister | . | . | . | . | 1893-1896, | 1903-1906 | |
| Charles Deering | . | . | . | . | . | 1893-1896 | |
| Archibald Rogers | . | . | . | . | 1894-1903, | 1924-1926 | |
| Lewis Rutherford Morris | . | . | 1897-08, | 1911-14, | 1921-1923 | | |
| Henry L. Stimson | . | . | . | . | . | 1897-1900 | |
| Madison Grant | . | . | . | . | . | 1897-1903 | |
| Gifford Pinchot | . | . | . | . | . | 1900-1903 | |
| Caspar Whitney | . | . | . | . | . | 1900-1903 | |
| John Rogers, Jr. | . | . | . | . | . | 1902-1905 | |

Officers, Boone and Crockett Club

| | |
|---------------------------------------|-----------------------------|
| Alden Sampson | 1903-1906 |
| Arnold Hague | 1904-1907 |
| James Hathaway Kidder | 1905-1908 |
| John Hill Prentice | 1905-1908 |
| A. Phimister Proctor | 1906-1909 |
| Charles Sheldon | 1907-1910, 1912-1915 |
| Lewis S. Thompson | 1907-1910 |
| Wm. Fitzhugh Whitehouse | 1908-1911, 1919-1922 |
| Alexander Lambert | 1908-1911, 1914-1917 |
| William Astor Chanler | 1909-1912 |
| Amos R. E. Pinchot | 1909-1912 |
| W. Redmond Cross | 1910-1913 |
| Charles Stewart Davison | 1910-1913 |
| E. Hubert Litchfield | 1911-1914, 1921-1923 |
| William K. Draper | 1912-15, 1918-21, 1922-1924 |
| George L. Harrison, Jr. | 1913-1916, 1919-1922 |
| Morgan Davis | 1914-1917 |
| Elton Clark | 1915-1918, 1919-1922 |
| J. Coleman Drayton | 1915-1918 |
| Willard H. Brownson | 1916-1919 |
| Dr. John C. Phillips | 1916-1919, 1920-1923 |
| C. Grant La Farge | 1918-1920 |
| Dr. Lewis Rutherford Morris | 1917-1920 |
| George D. Pratt | 1918-1921, 1923-1925 |
| Frederic C. Walcott | 1918-1921, 1922-1924 |
| Winthrop Chanler | 1918-1921 |
| Kermit Roosevelt | 1919-1920 |
| Childs Frick | 1920-1923 |
| D. M. Barringer | 1921-1922 |
| Heyward Cutting | 1921-1923 |
| Norman O. Whitehouse | 1922-1924 |
| Frank Lyman | 1923-1925 |
| Robert C. Hill | 1923-1925 |
| Percy C. Madeira | 1924-1926 |

Officers of the Boone and Crockett Club
for the Year 1924

President

George Bird Grinnell

Vice-Presidents

Class of 1924

Barton W. Evermann

George L. Harrison, Jr.

John C. Merriam

Class of 1925

Madison Grant

W. B. Mershon

Charles Sheldon

Class of 1926

Charles Stewart Davison

Dr. Hugh Cabot

Gen. Roger D. Williams

Secretary

Kermit Roosevelt

44 Beaver Street, New York City

Treasurer

William Redmond Cross

31 Pine Street, New York City

Executive Committee

Class of 1924

William K. Draper

Frederic C. Walcott

Norman O. Whitehouse

Class of 1925

George D. Pratt

Frank Lyman

Robert C. Hill

Officers, Boone and Crockett Club

Class of 1926

Winthrop Chanler
Archibald Rogers
Percy C. Madeira

Editorial Committee

George Bird Grinnell Charles Sheldon

Game Preservation Committee

Heyward Cutting, Chairman
W. Douglas Burden Charles Stewart Davison
Morgan Davis J. Walter Wood

Advisory Members

John B. Burnham Lewis R. Morris
H. S. Graves E. W. Nelson

Committee for the Protection of Fur-bearing Animals

W. Redmond Cross Heyward Cutting
W. Douglas Burden

Constitution

Article I

This Club shall be known as the Boone and Crockett Club.

Article II

The objects of the Club shall be:

- A. To promote manly sport with the rifle.
- B. To promote travel and exploration in wild and unknown or but partially known lands.
- C. To work for the preservation of the large game of this country and, so far as possible, to further legislation for that purpose and to assist in enforcing the existing laws.
- D. To promote inquiry into, and to record observations of, the habits and natural history of the various wild animals.
- E. To encourage making the results of sport available for scientific study in museums.
- F. To bring about among the members the interchange of opinions and ideas on hunting, travel and exploration, on the various kinds of hunting rifles, and on the haunts and habits of game animals.

Article III

The Club shall consist of not more than one hundred Regular Members, and of such Associate and Honorary

Constitution, Boone and Crockett Club

Members as may be elected by the Executive Committee. Associate Members shall be chosen from those who by their furtherance of the objects of the Club, or general qualifications, shall recommend themselves to the Executive Committee; but except for special reasons satisfactory to the Executive Committee no one eligible to Regular Membership shall be elected to Associate Membership. Associate and Honorary Members shall be exempt from dues and initiation fees, and shall not be entitled to vote.

Article IV

A. No one shall be eligible for Regular Membership who shall not have killed with the rifle, in fair chase, at least one adult male individual of each of three of the various species of American large game.

B. Under the head of American large game are included the following animals: Alaska brown bear, black bear, grizzly bear, polar bear, cougar, buffalo (bison), musk-ox, mountain sheep, prong-horn antelope, white goat, elk (wapiti), white-tail deer, mule-deer, Columbia black-tail deer, moose and caribou.

C. The term fair chase shall not be held to include killing bear or cougar in traps, or crusting moose, elk or deer in deep snow, jacking, or killing them from a boat while swimming, or any other method of hunting that is unsportsmanlike.

D. The use of traps, except in collecting for scientific purposes, the making of large bags, the killing of game while swimming in water, or helpless in deep snow, and the unnecessary killing of the females or young of any

Hunting and Conservation

species of ruminant, shall be deemed offenses. Any member who shall commit such offenses may be suspended or expelled from the Club by a two-thirds vote of the Executive Committee.

Article V

A. The officers of the Club shall be a President, nine Vice-Presidents, a Secretary and a Treasurer, all of whom, except the Vice-Presidents, shall be elected annually, and, except the Vice-Presidents, shall be Regular Members.

B. The President shall preside at the meetings of the Club and of the Executive Committee. A Vice-President may preside at a meeting of the Club in the absence of the President.

C. The nine Vice-Presidents shall be divided into three classes of three members each; each class holding office for three years. One class shall be elected at each annual meeting of the Club to replace the outgoing class. They may be either Regular or Associate Members, and shall be chosen to reflect so far as possible the national character of the Club.

D. The Secretary shall give notice of all meetings of the Club and of the Executive Committee, and shall keep minutes of such meetings. He shall conduct the correspondence and keep the records of the Club. He shall furnish the Treasurer the names and addresses of all members elected to membership, and shall advise him of all transfers or changes affecting the said membership.

E. The Treasurer shall collect and disburse all moneys of the Club, keep the accounts of the Club and report thereon at each Annual Meeting of the Club.

Constitution, Boone and Crockett Club

Article VI

A. There shall be an Executive Committee consisting of twelve members, three of whom shall be the President, the Secretary and the Treasurer. The other nine members shall consist of three classes of three Regular Members each, each class holding office for three years. One class shall be elected at each Annual Meeting of the Club to replace the outgoing class.

B. The Executive Committee shall have general charge of the affairs and property of the Club. It shall have full power and it shall be its duty to carry out the purposes of the Club as understood by it. Its understanding of such purposes and its interpretation of this constitution shall be deemed conclusive, except as against a majority vote of the Regular Members of the Club.

C. The Executive Committee shall meet from time to time at the call of the President, or of a majority of its members.

D. The Executive Committee may fill any vacancy in its body by the election of a member to hold office until the next Annual Meeting.

E. The Executive Committee shall constitute the Committee on Admissions. The Committee on Admissions may recommend for Regular Membership by unanimous vote of its members present at any meeting, any person who is qualified under the foregoing Articles of this Constitution. Candidates thus recommended shall be voted on by the Club at large. Six blackballs shall exclude, and at least one-third of the members must vote in the affirmative to elect.

Hunting and Conservation

F. Five members shall constitute a quorum of the Executive Committee.

Article VII

A. Any member may be suspended or expelled for any cause which may seem sufficient to them by a two-thirds vote of all the members of the Executive Committee. A copy of the charges shall be served upon such member, either personally or by mail to his last known address, at least three weeks before the meeting at which they shall be considered, together with a notice of the time and place of such meeting. The member shall be entitled to be heard at such meeting.

B. Any action under the preceding paragraph may be revoked or modified by subsequent vote of the Executive Committee.

Article VIII

A. The entrance fee for Regular Members shall be Twenty-five dollars. The annual dues of Regular Members shall be ten dollars, and shall be payable on February 1st of each year.

B. Any member who shall fail to pay his dues on or before August 1st following shall thereupon cease to be a member of the Club. The Executive Committee, however, in its discretion, shall have power to reinstate such member.

Article IX

This Constitution may be amended by a two-thirds vote of the Regular Members present at any Annual Meeting

Constitution, Boone and Crockett Club

of the Club, provided that notice of the proposed amendment shall have been mailed, by the Secretary, to each Regular Member of the Club, at least two weeks before said meeting.

Rules of the Executive Committee Regarding Proposals for Membership

1. Candidates must be proposed and seconded in writing by two members of the Club.

2. Letters concerning each candidate must be addressed to the Executive Committee by at least two members, other than the proposer and seconder.

3. No candidates for regular membership shall be proposed, seconded, or endorsed by any member of the Committee on Admissions.

Additional information as to the admission of members may be found in Articles III, VI, and VIII of the Constitution.

Names and Addresses of Members of the Boone and Crockett Club

Regular Members

1913. Copley Amory, 131 East 66th Street, New York
1923. Roy Chapman Andrews, American Museum of Natural
History, New York
1903. James W. Appleton, Knickerbocker Club, New York
1917. Edwin G. Baetjer, 16 West Madison Street, Baltimore,
Md.
1922. Henry Bannon, Portsmouth, Ohio
1922. Dr. Thomas Barbour, Museum of Comparative Zoölogy,
Cambridge, Mass.
1892. Daniel Moreau Barringer, 1242 Real Estate Trust Build-
ing, Philadelphia, Pa.
1907. Lyman M. Bass, 1330 Marine Trust Building, Buffalo,
N. Y.
1924. William Benjamin, Garrison-on-Hudson, N. Y.
1897. Franklin S. Billings, Woodstock, Vt.
1894. William B. Bogert, Keswick, Va.
1923. Marshall Bond, 328 East Islay Street, Santa Barbara, Cal.
1921. Gorham Brooks, 60 State Street, Boston, Mass.
1920. William Douglas Burden, Knickerbocker Club, New York
1899. Rear Admiral Willard H. Brownson, 1751 N Street,
N. W., Washington, D. C.
1915. Dr. Hugh Cabot, Department of Surgery, University of
Michigan, Ann Arbor, Mich.
1892. Winthrop Chanler, 60 Wall Street, New York
1921. Benjamin Chew, Radnor, Pa.
1913. Elton Clark, 19 Pearl Street, Boston, Mass.

Hunting and Conservation

1920. Major Francis T. Colby, Seventh (7th) Field Artillery, Camp Dix, N. J.
1919. Alfred M. Collins, 226 Columbia Avenue, Philadelphia, Pa.
1913. C. Arthur Comstock, 52 Broadway, New York
1908. W. Redmond Cross, 12 East 80th Street, New York
(Also Morristown, N. J.)
1893. Charles P. Curtis, 71 Ames Building, Boston, Mass.
1920. Heyward Cutting, 125 East 57th Street, New York
1895. Dr. Paul J. Dashiell, U. S. Naval Academy, Annapolis, Md.
1912. Morgan Davis, 66 Broadway, New York
1897. Charles Stewart Davison, 7 Dey Street, New York
1924. F. Trubee Davison, Locust Valley, L. I.
1890. Charles Deering, 137 South La Salle Street, Chicago, Ill.
1893. Walter B. Devereux, 120 Broadway, New York
1922. Fairman R. Dick, 30 Pine Street, New York
1909. Bayard Dominick, Jr., 115 Broadway, New York
1893. Dr. William K. Draper, 121 East 36th Street, New York
1888. J. Coleman Drayton, 145 East 35th Street, New York
1918. William Astor Drayton, 55 East 65th Street, New York
1915. Lincoln Ellsworth, Kirby Building, Cleveland, Ohio
1901. Robert Temple Emmet, 48 Washington Avenue, Schenectady, N. Y.
1915. Childs Frick, Roslyn, L. I.
1914. Goelet Gallatin, 141 Broadway, New York
1893. DeForest Grant, 70 East 54th Street, New York
1893. Madison Grant, 22 East 49th Street, New York
1910. Henry G. Gray, 49 Wall Street, New York
1911. Joseph C. Grew, 310 Sears Building, Boston, Mass.
1888. George Bird Grinnell, 238 East 15th Street, New York
1908. George L. Harrison, Jr., 400 Chestnut St., Philadelphia, Pa.
1917. Robert C. Hill, 143 Liberty Street, New York
1914. Evan Hollister, 814 Fidelity Building, Buffalo, N. Y.
1915. Norman James, Catonsville, Baltimore, Md.
1895. Dr. Walter B. James, 7 East 70th Street, New York

Members, Boone and Crockett Club

1893. C. Grant La Farge, 101 Park Avenue, New York
1894. Dr. Alexander Lambert, 43 East 72d Street, New York
1908. Townsend Lawrence, 47 Broad Street, New York
1909. E. Hubert Litchfield, 111 Broadway, New York
1895. Frank Lyman, 34 Remsen Street, Brooklyn, N. Y.
1895. George H. Lyman, 351 Commonwealth Avenue, Boston, Mass.
1908. Theodore Lyman, Jefferson Physical Laboratory, Harvard University, Cambridge, Mass.
1893. Charles B. Macdonald, 15 Broad Street, New York
1910. Percy C. Madeira, 260 South Broad Street, Philadelphia, Pa.
1895. Col. Henry May, 1325 K Street, Washington, D. C.
1917. Dr. Charles G. Mixter, 187 Beacon Street, Boston, Mass.
1895. Dr. Lewis R. Morris, 155 West 58th Street, New York
1919. A. Perry Osborn, 33 Pine Street, New York
1908. Dr. Paul Outerbridge, 49 West 74th Street, New York
1896. R. A. F. Penrose, Jr., 460 Bullitt Building, Philadelphia, Pa.
1905. Robert Forbes Perkins, Owls Nest Farm, Framingham, Mass.
1919. Dr. John C. Phillips, Wenham, Mass.
1895. Henry Clay Pierce, 927 Fifth Avenue, New York
1922. R. Stuyvesant Pierrepont, 115 Broadway, New York
1907. Amos Pinchot, 101 Park Avenue, New York
1897. Gifford Pinchot, Real Estate Trust Building, Philadelphia, Pa.
1912. Wilson Potter, Chestnut Hill, Philadelphia, Pa.
1913. George D. Pratt, 215 Ryerson Street, Brooklyn
1901. John H. Prentice, 23 East 69th Street, New York
1893. Percy Rivington Pyne, 680 Park Avenue, New York
1888. Archibald Rogers, Hyde Park-on-Hudson, N. Y.
1897. Dr. John Rogers, 177 East 71st Street, New York
1922. Archibald B. Roosevelt, Cold Spring Harbor, L. I.
1912. Kermit Roosevelt, 44 Beaver Street, New York
1917. Theodore Roosevelt, 1601 21st Street, N. W., Washington, D. C.

Hunting and Conservation

1893. Hon. Elihu Root, 31 Nassau Street, New York
1888. Bronson Rumsey, 676 Ellicott Square, Buffalo, N. Y.
1895. Alden Sampson, The Chastleton, 16th and R Streets,
Washington, D. C.
1907. Dr. Leonard C. Sanford, P. O. Box 524, New Haven, Conn.
1903. Charles Sheldon, 1830 Phelps Place, Washington, D. C.
1897. Dr. William Lord Smith, Harvard Club, New York
1899. E. Le Roy Stewart, Beacon-on-Hudson, N. Y.
1893. Henry L. Stimson, 32 Liberty Street, New York
1899. Lewis S. Thompson, Red Bank, N. J.
1913. Frederic C. Walcott, 17 East 42d Street, New York
1893. James Sibley Watson, 11 Prince Street, Rochester, N. Y.
1923. Col. D. B. Wentz, Land Title Building, Philadelphia, Pa.
1920. Norman O. Whitehouse, 103 East 84th Street, New York
1905. William Fitzhugh Whitehouse, 9 East 82d Street, New
York
1891. Caspar Whitney, Irvington-on-Hudson, N. Y.
1921. Cornelius V. Whitney, 871 Fifth Avenue, New York
1897. E. P. Wilbur, Jr., 515 Delaware Ave., S. Bethlehem, Pa.
1892. Owen Wister, 1004 West End Trust Building, Philadel-
phia, Pa.
1895. J. Walter Wood, 118 East 65th Street, New York
1920. Oliver Wolcott, 40 State Street, Boston, Mass.

Associate Members

1912. Dr. William L. Abbott, 400 South 15th Street, Philadel-
phia, Pa.
1912. Carl E. Akeley, 1 West 89th Street, New York
1922. Hon. H. M. Albright, Yellowstone National Park, Wyo-
ming
1895. Gen. Henry T. Allen, War Department, Washington,
D. C.
1923. Vernon Bailey, 1834 Kalorama Road, Washington, D. C.
1914. James Barnes, 20 Gramercy Park, New York
1893. Hon. Truxton Beale, 28 Jackson Place, Washington, D. C.
1903. Gen. David L. Brainard, War Department, Washington,
D. C.

Members, Boone and Crockett Club

1914. Gen. L. M. Brett, 1301 K Street, N. W., Washington, D. C.
1888. William B. Bristow, 2 Rector Street, New York
1922. Capt. Allan Brooks, Okanagan Landing, B. C., Canada
1921. Henry Grier Bryant, 2129 Walnut Street, Philadelphia, Pa.
1916. John B. Burnham, 233 Broadway, New York
1912. William B. Cabot, 447 Marlborough Street, Boston, Mass.
1895. William Astor Chanler, Knickerbocker Club, New York
1919. William E. Colby, Mills Building, San Francisco, Cal.
1909. Col. Charles J. Crane, 717 Grayson Street, San Antonio, Texas
1919. Barton W. Evermann, California Academy of Science, Golden Gate Park, San Francisco, Cal.
1915. Dr. Albert K. Fisher, Biological Survey, Washington, D. C.
1893. John Sterett Gittings, "Ashburton," Baltimore, Md.
1888. George H. Gould, P. O. Box 643, Santa Barbara, Cal.
1912. Henry S. Graves, 339 Prospect Avenue, New Haven, Conn.
1888. Major-Gen. Adolphus W. Greeley, Cosmos Club, Washington, D. C.
1922. Col. W. B. Greeley, U. S. Department of Agriculture, Forest Service, Washington, D. C.
1919. Dr. Joseph Grinnell, University of California, Berkeley, Cal.
1888. Major Moses Harris, 483 Harvard Street, Rochester, N. Y.
1915. Edmund L. Heller, Field Museum of Natural History, Chicago, Ill.
1912. Henry W. Henshaw, The Ontario, Washington, D. C.
1909. Dr. William T. Hornaday, New York Zoölogical Park, New York
1910. Dr. John Howland, Johns Hopkins Hospital, Baltimore, Md.
1907. Hon. William E. Humphrey, Coleman Building, Seattle, Wash. (Also 534 Woodward Building, Washington, D. C.)

Hunting and Conservation

1902. James Hathaway Kidder, 8 East 82d Street, New York
(Also Brookgreen, Georgetown, South Carolina)
1923. Aldo Leopold, Albuquerque, N. Mex.
1893. Hon. Henry Cabot Lodge, 1765 Massachusetts Avenue,
Washington, D. C. (Summer Address: "Nahant,"
Mass.)
1897. A. P. Low, 154 McLaren Street, Ottawa, Canada
1916. Stephen T. Mather, National Park Service, Washington,
D. C.
1912. Gen. Frank R. McCoy, care War Department, Washing-
ton, D. C.
1923. John McGuire, 1824 Curtis Street, Denver, Colo.
1893. Prof. John Bach McMaster, 2109 Delancy Street, Phila-
delphia, Pa.
1893. Dr. C. Hart Merriam, 1919 16th Street, Washington, D. C.
1919. Prof. John C. Merriam, 2400 16th Street, Washington,
D. C.
1911. W. B. Mershon, Saginaw, Mich.
1921. John G. Millais, Comptons Brow, Horsham, Sussex, Eng-
land
1922. Major Barrington Moore, 925 Park Avenue, New York
1893. J. Chester Morris, Jr., Spring House P. O., Montgomery
Co., Pa.
1908. E. W. Nelson, U. S. Biological Survey, Washington, D. C.
1910. Hon. Frank Oliver, 191 Somerset Street, Ottawa, Canada
1912. Wilfred H. Osgood, Field Museum of Natural History,
Chicago, Ill.
1893. Dr. Charles B. Penrose, 1720 Spruce Street, Philadelphia,
Pa.
1893. Major John Pitcher, Edgewater, Md.
1893. A. Phimister Proctor, 433 Melville Avenue, Palo Alto,
Cal.
1922. Brig.-Gen. Sir Charles Delmé-Radcliffe, The Bath Club,
34, Dover Street, W. I., London
1888. John E. Roosevelt, 46 Cedar Street, New York
1923. George E. Scott, 199 Lake Shore Drive, Chicago, Ill.
1906. Major-Gen. Hugh Lenox Scott, Princeton, N. J.

Members, Boone and Crockett Club

1905. Hon. George Shiras, 3d, Stoneleigh Court, Washington, D. C.
1902. Dr. A. Donaldson Smith, Roulette, Potter County, Pa.
1909. Dr. Charles H. Townsend, N. Y. Aquarium, New York
1905. Hon. Charles D. Walcott, Smithsonian Institute, Washington, D. C.
1910. A. Bryan Williams, 1170 Georgia Street, Vancouver, B. C.
1889. Gen. Roger D. Williams, Lexington, Ky.
1911. Lieut.-Col. William Wood, 59 Grande Allee, Quebec, Canada

Honorary Member

1899. Henry Fairfield Osborn, 998 Fifth Avenue, New York

Deceased Members

Regular

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| Robert Bacon | John G. Follansbee |
| Gen. Thomas H. Barber | James I. Gardiner |
| Albert Bierstadt | William Milne Grinnell |
| George Bird | Howard Melville Hanna |
| Robert P. Blake | Arnold Hague |
| George Bleistein | John G. Heckscher |
| William J. Boardman | A. Barton Hepburn |
| Benjamin H. Bristow | Col. H. C. McDowell |
| Arthur Erwin Brown | Major J. C. Merrill |
| John L. Cadwalader | Dr. William H. Merrill |
| H. A. Carey | Dr. John K. Mitchell |
| Royal Phelps Carroll | Henry Norcross Munn |
| E. W. Davis | Lyman Nichols |
| Henry P. Davison | James S. Norton |
| H. Casimir de Rham | Thomas Paton |
| Walter B. Devereux, Jr. | Boies Penrose |
| Col. Richard Irving Dodge | William Hallett Phillips |
| Maxwell Evarts | John J. Pierrepont |
| Robert H. Munro-Ferguson | Benjamin W. Richards |

Hunting and Conservation

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| Douglas Robinson | Dr. John L. Seward |
| E. P. Rogers | Charles F. Sprague |
| Nathaniel Pendleton Rogers | Frederick M. Stephenson. |
| Elliott Roosevelt | Rutherford Stuyvesant |
| Dr. J. West Roosevelt | Frank Thomson |
| Laurence D. Rumsey | W. K. Townsend |
| Dean Sage | William Austin Wadsworth |
| William Cary Sanger | Maj.-Gen. Wm. D. Whipple |
| Philip Schuyler | Charles E. Whitehead |
| M. G. Seckendorff | Robert Dudley Winthrop |

Associate

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| Dr. J. A. Allen | Clarence King |
| Brig.-Gen. George S. Anderson | John F. Lacey |
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| Edward F. Beale | Francis G. Newlands |
| D. C. Beaman | Gen. John W. Noble |
| Col. F. A. Boutelle | George C. Perkins |
| Major Campbell Brown | Sir Clive Phillips-Wolley |
| Col. John Mason Brown | Warburton Pike |
| William L. Buchanan | Redfield Proctor |
| D. H. Burnham | Thomas B. Reed |
| Edward North Buxton | W. Woodville Rockhill |
| Thomas H. Carter | Carl Schurz |
| A. P. Gordon-Cumming | Capt. Fred'k Courtney Selous, |
| Brig.-Gen. Wm. E. Dougherty | D.S.O. |
| Lieut.-Col. Frank A. Edwards | B. C. Tilghman |
| Dr. Ramon Guiteras | T. S. Van Dyke |
| Wade Hampton | G. G. Vest |
| Maj.-Gen. W. H. Jackson | Samuel D. Warren |
| Capt. David H. Jarvis | Lieut.-Gen. S. B. M. Young |

Honorary

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| Judge John D. Caton | Theodore Roosevelt |
| Dr. Daniel Giraud Elliot | Gen. Philip Sheridan |
| Francis Parkman | Gen. Wm. Tecumseh Sherman |
| Col. William D. Pickett | |

